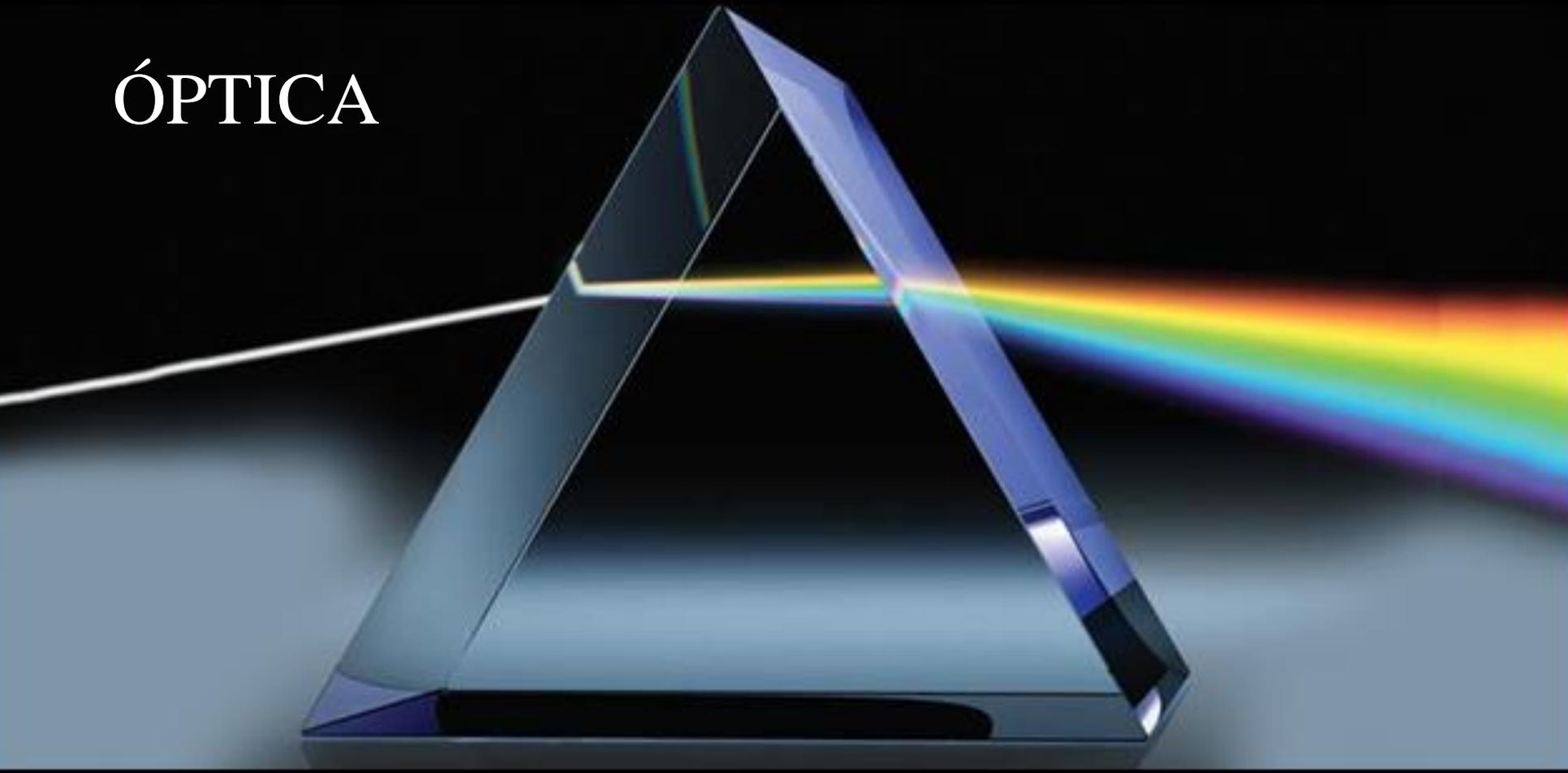
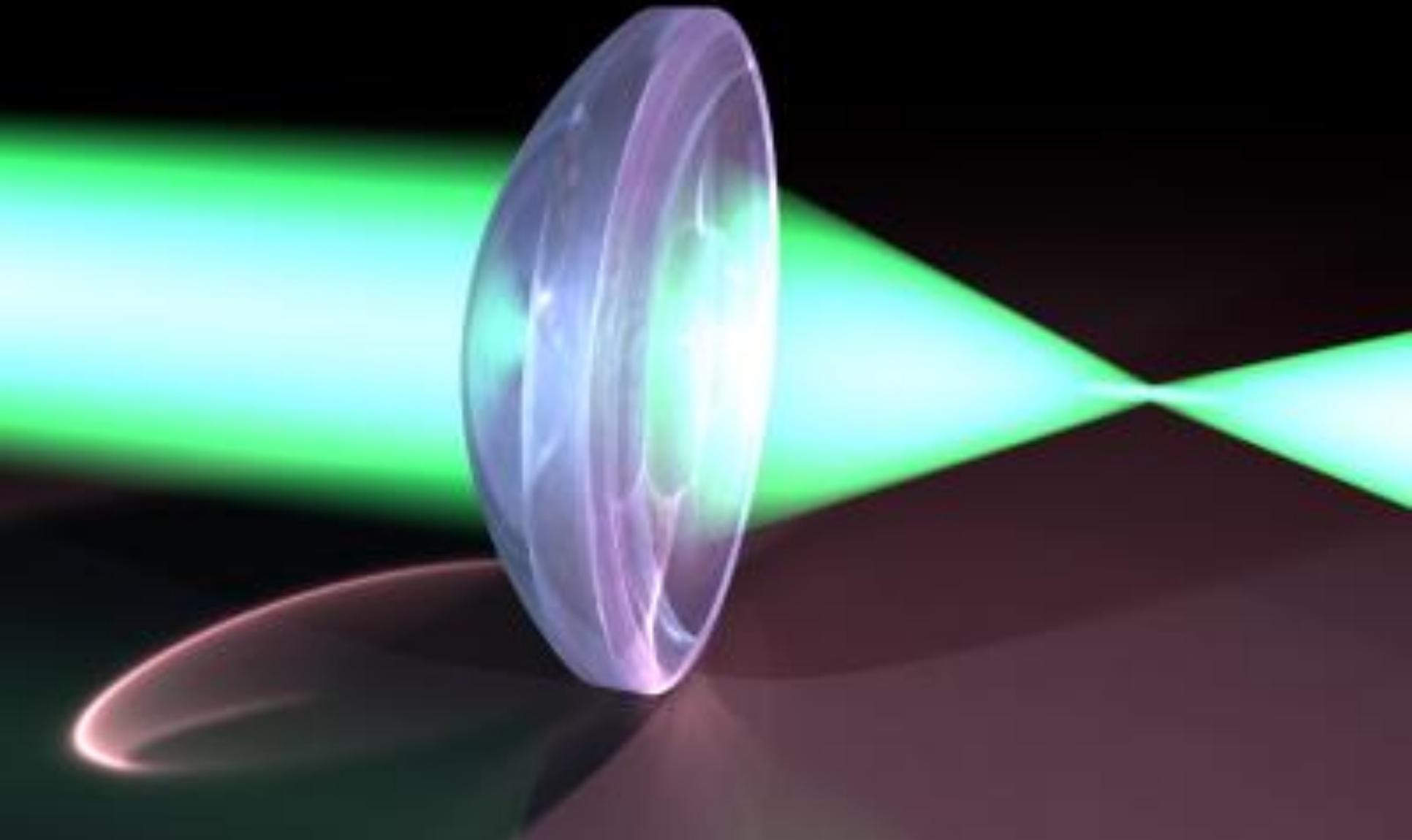
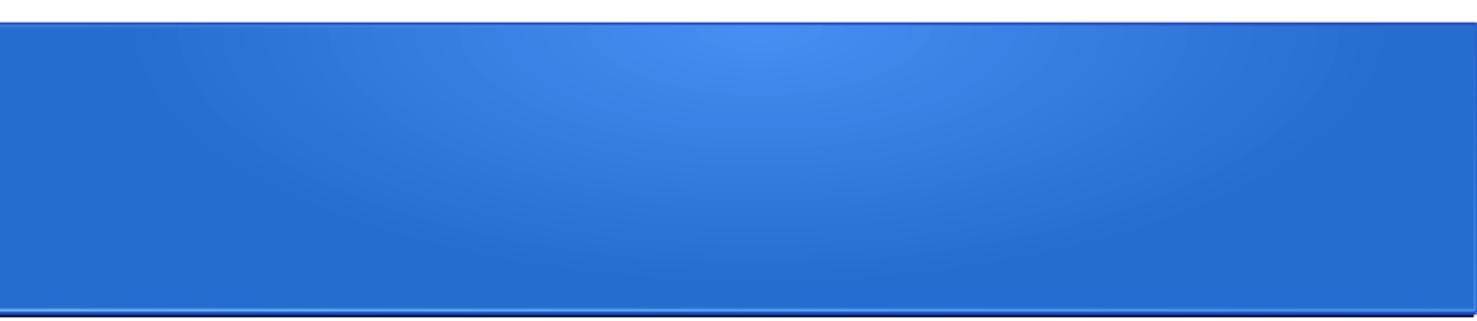


# ÓPTICA



# LENTES ESFÉRICAS

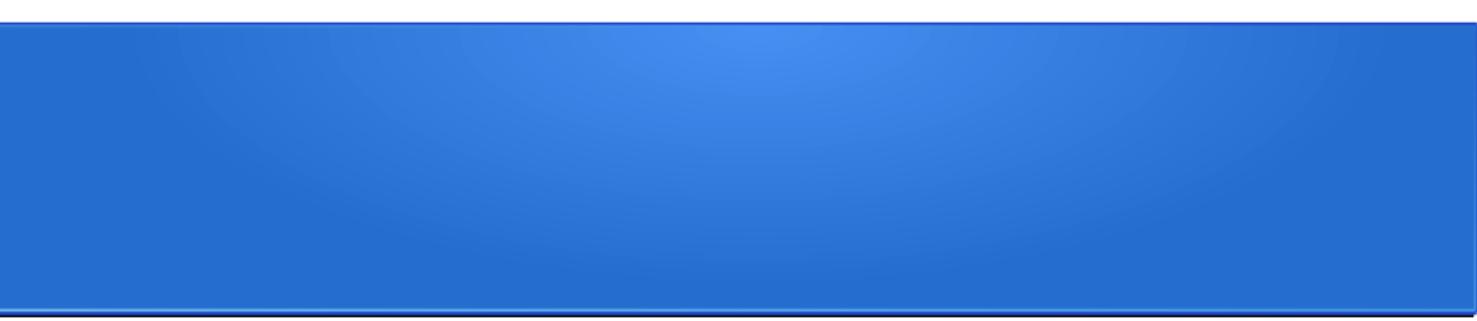




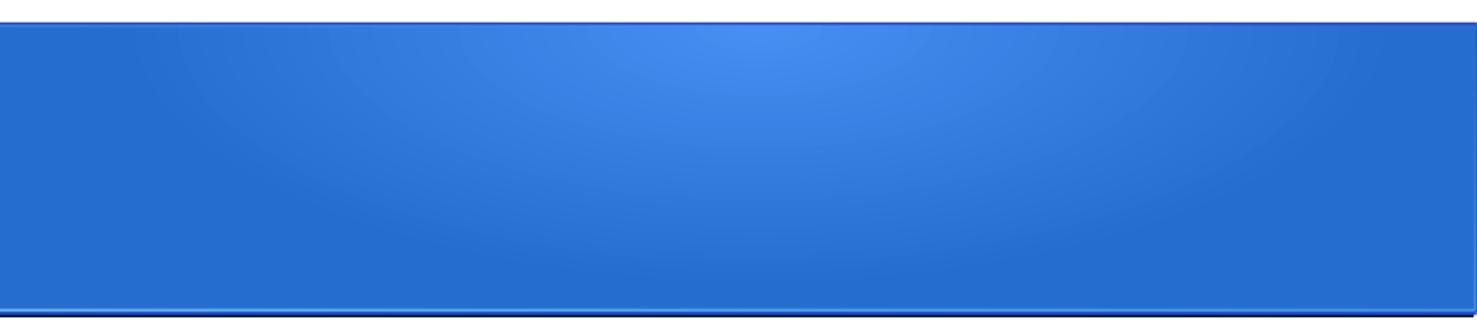
# FORMAÇÃO DE IMAGENS EM LENTES: MÉTODO GEOMÉTRICO

PROF. DANILO

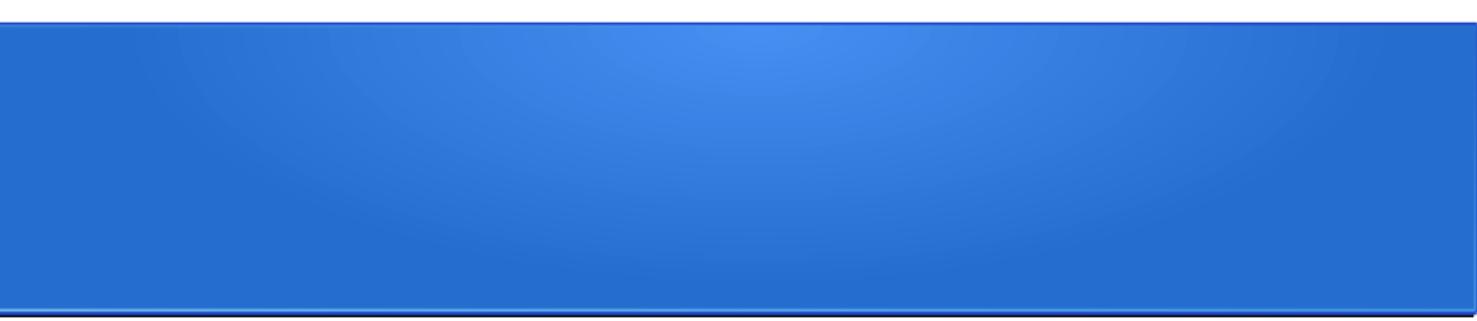
[fisica.professordanilo.com](http://fisica.professordanilo.com)



# LENTES ESFÉRICAS



# LENTES CONVERGENTES



Primeiro caso

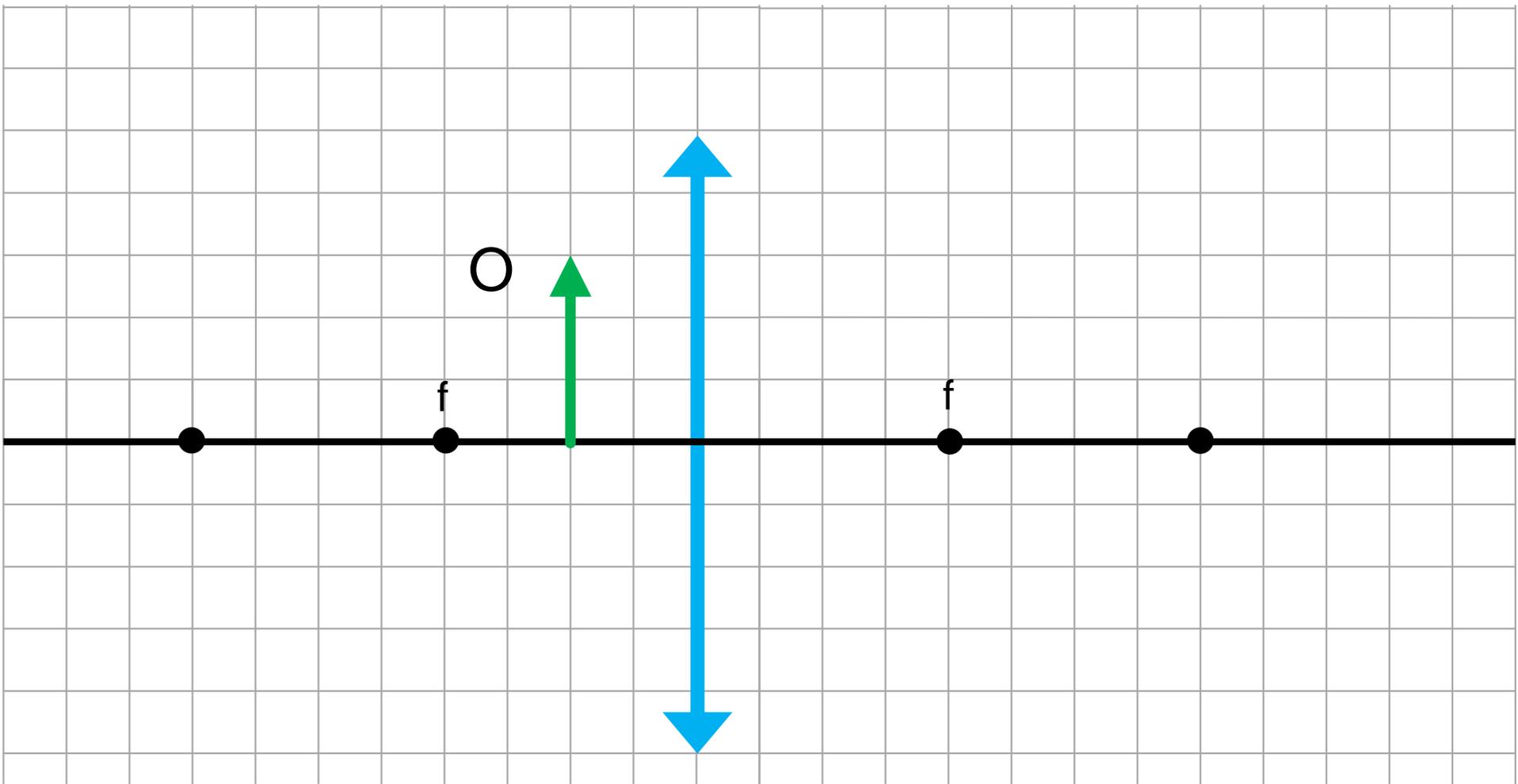


Figura 1: Objeto entre o vértice e o foco

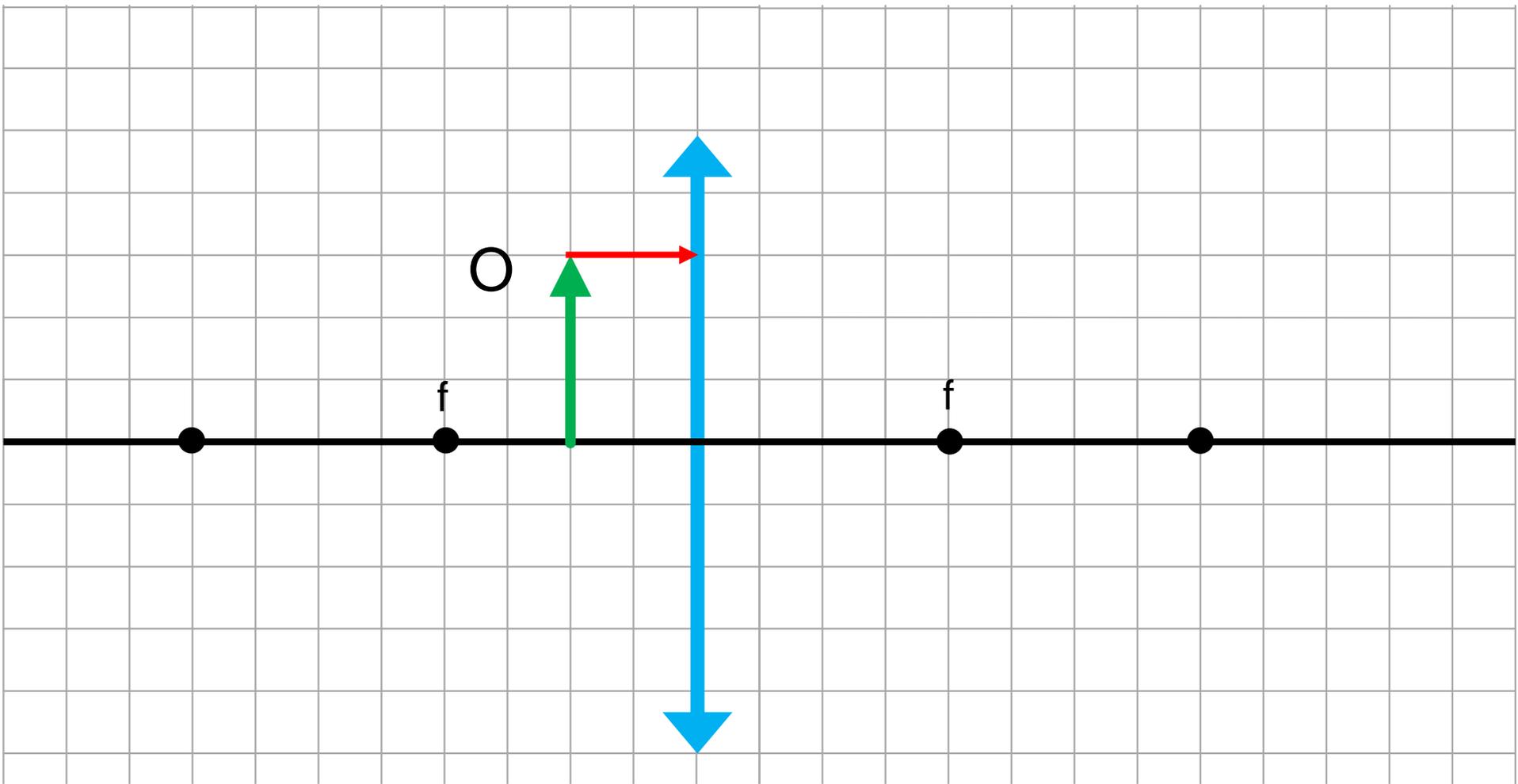


Figura 1: Objeto entre o vértice e o foco

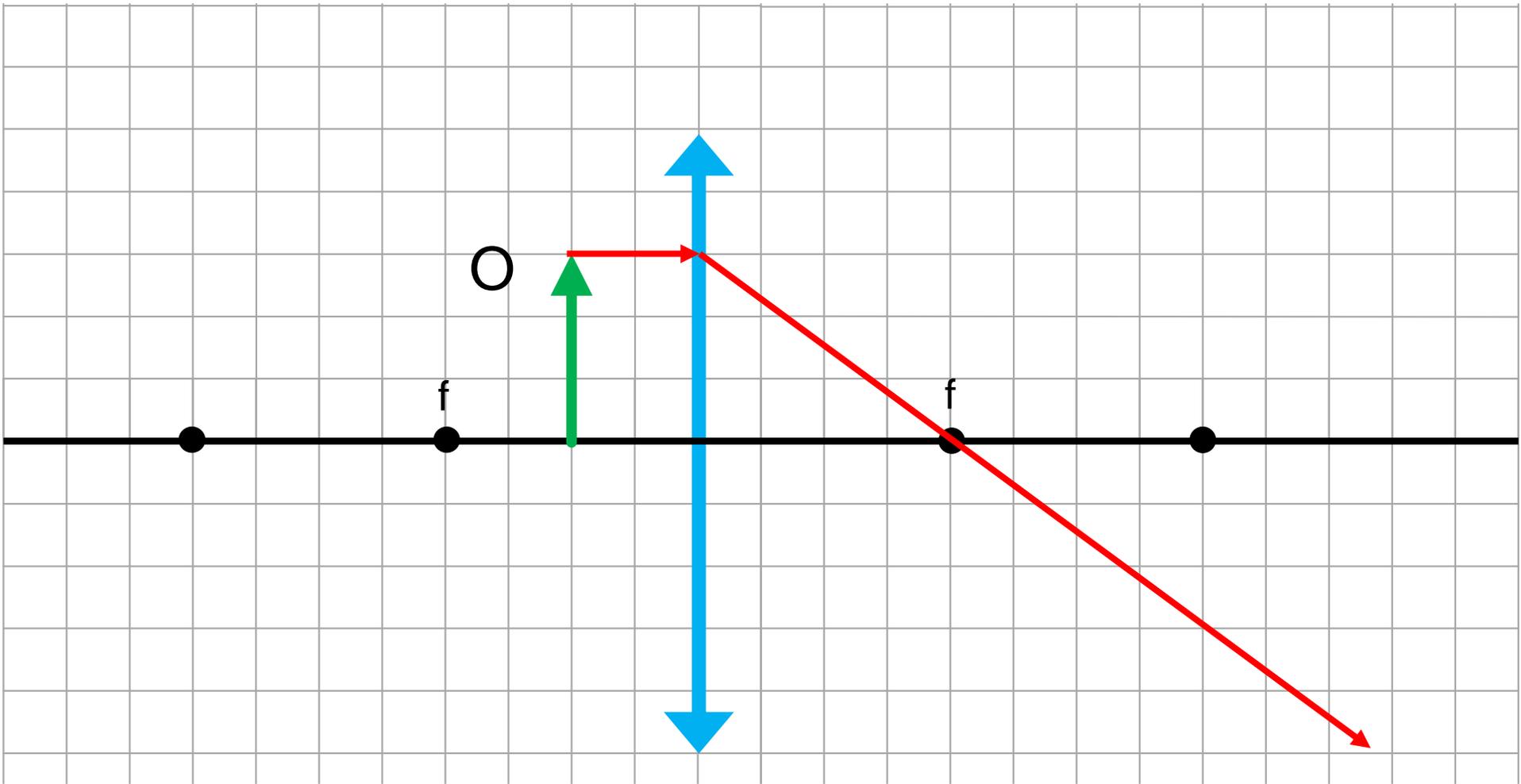


Figura 1: Objeto entre o vértice e o foco

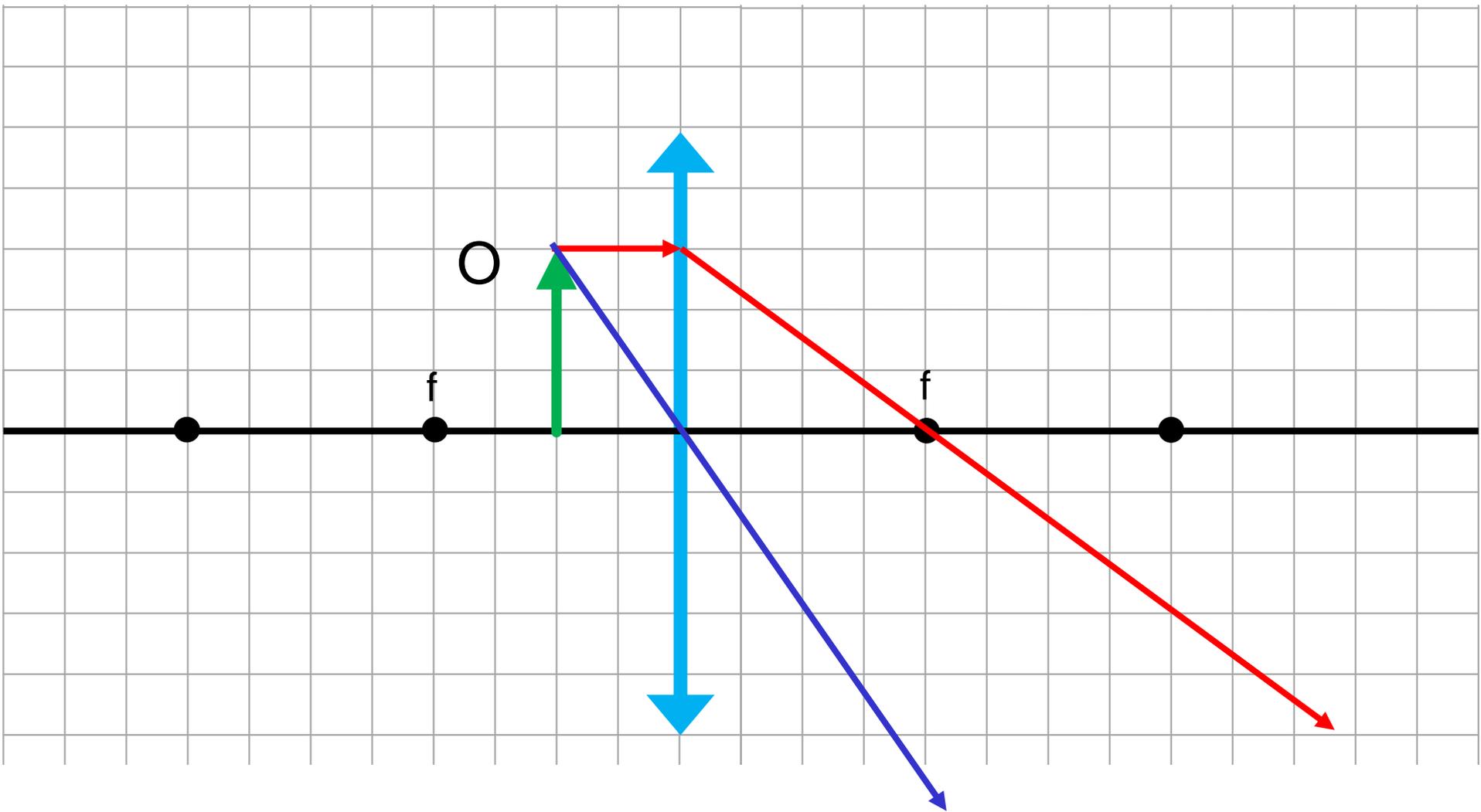


Figura 1: Objeto entre o vértice e o foco

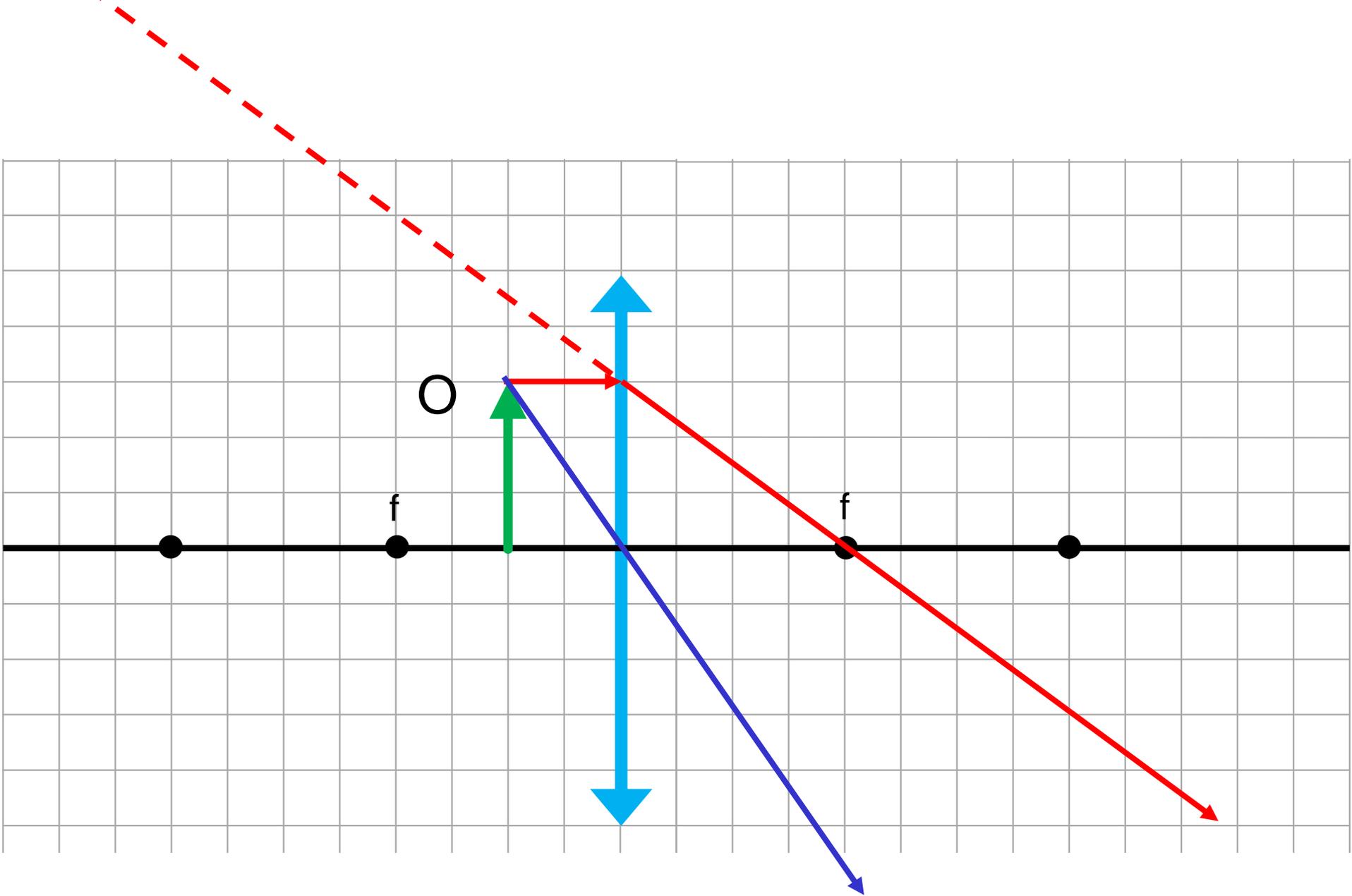


Figura 1: Objeto entre o vértice e o foco

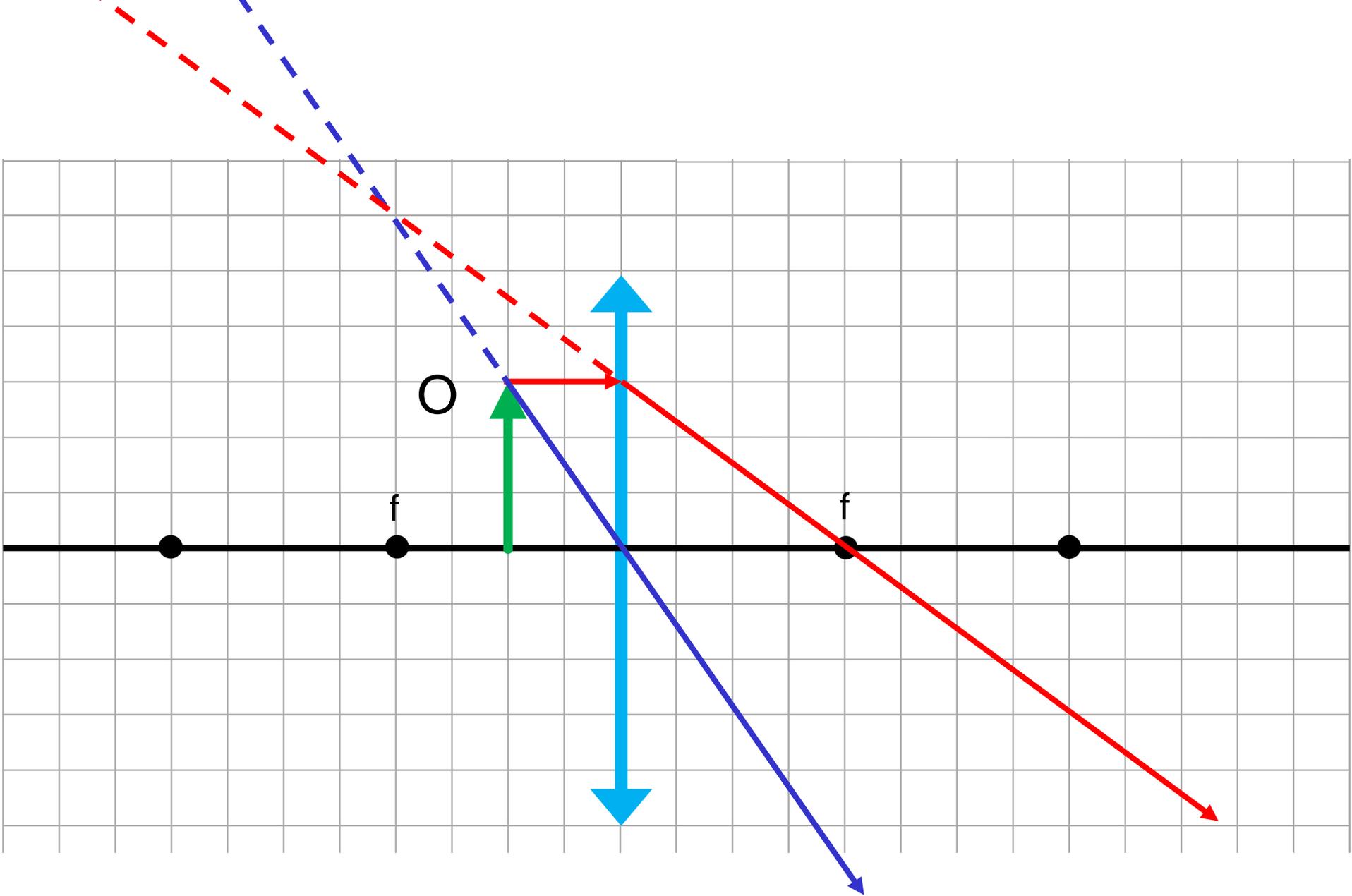


Figura 1: Objeto entre o vértice e o foco

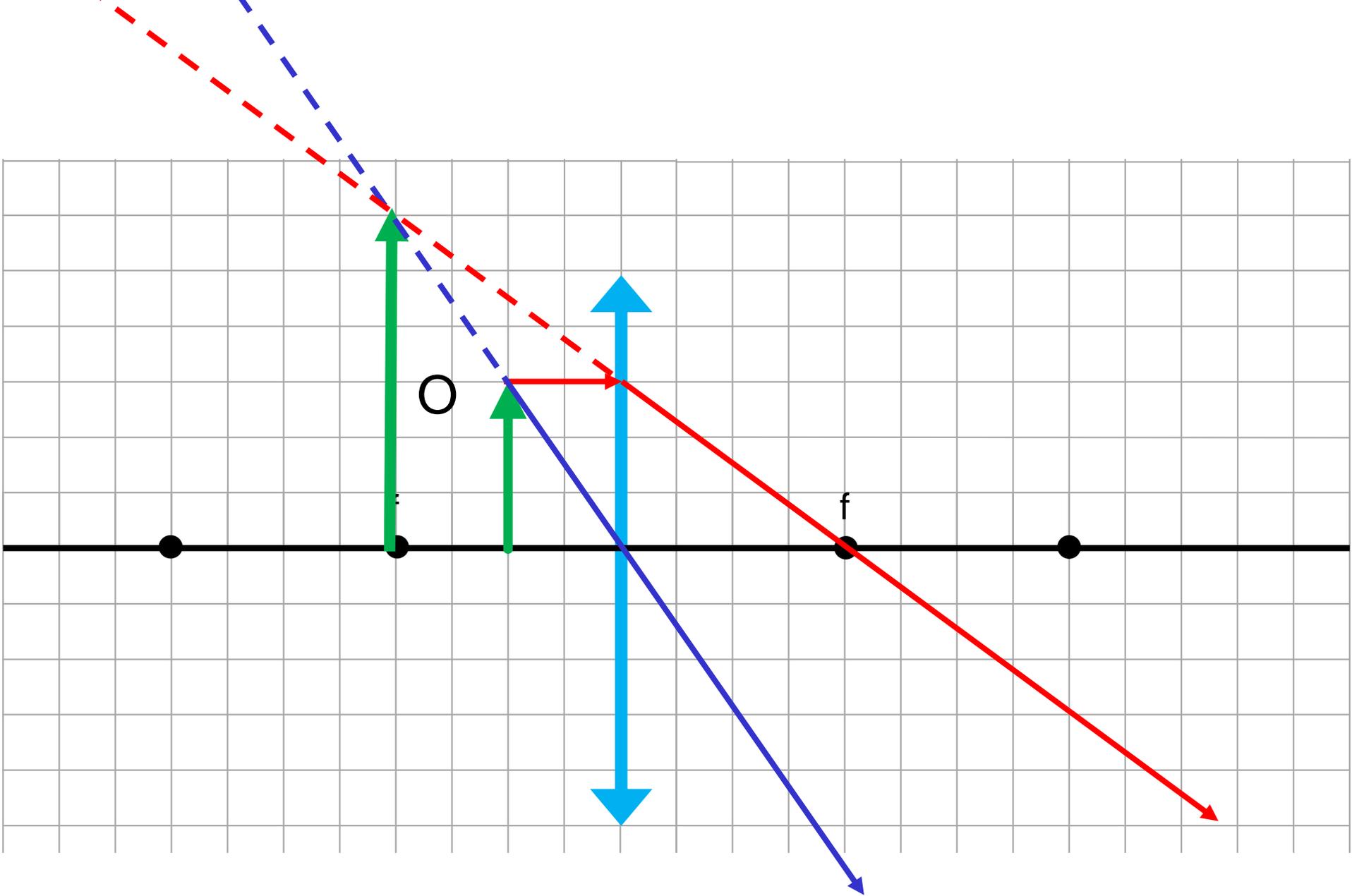


Figura 1: Objeto entre o vértice e o foco

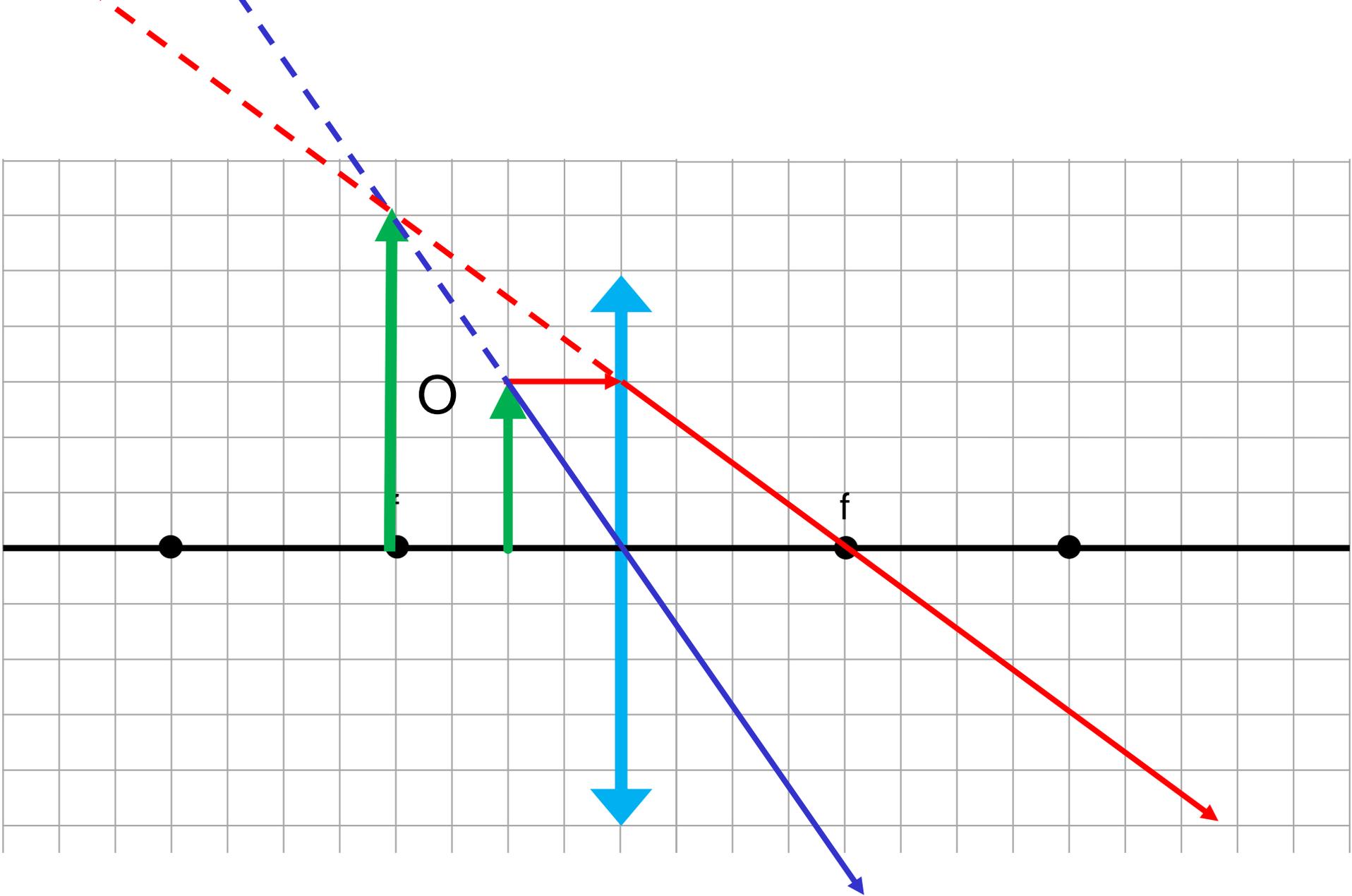


Figura 1: Objeto entre o vértice e o foco

CLASSIFICAÇÃO:

Imagem

VIRTUAL

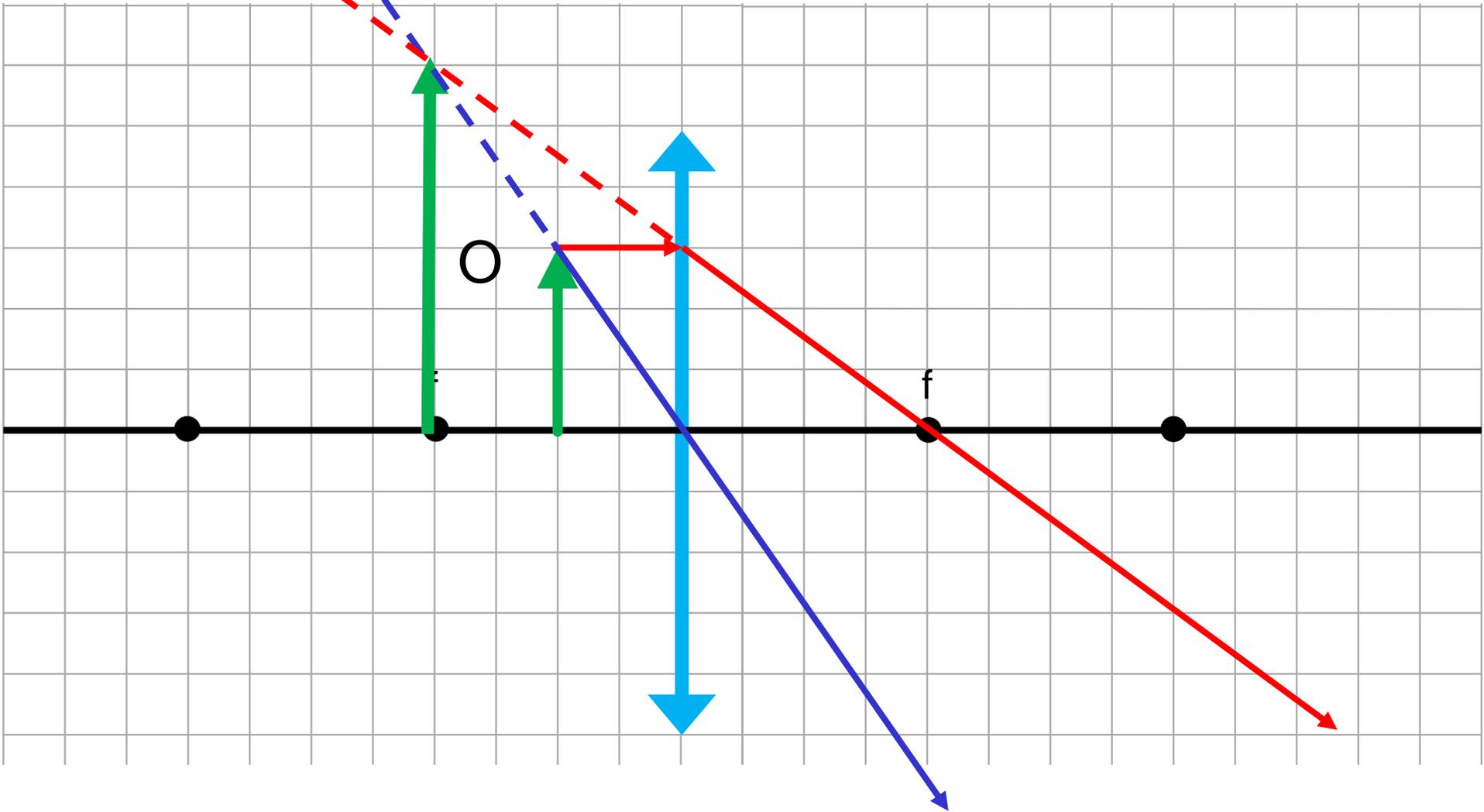


Figura 1: Objeto entre o vértice e o foco

CLASSIFICAÇÃO:

Imagem

VIRTUAL  
DIREITA

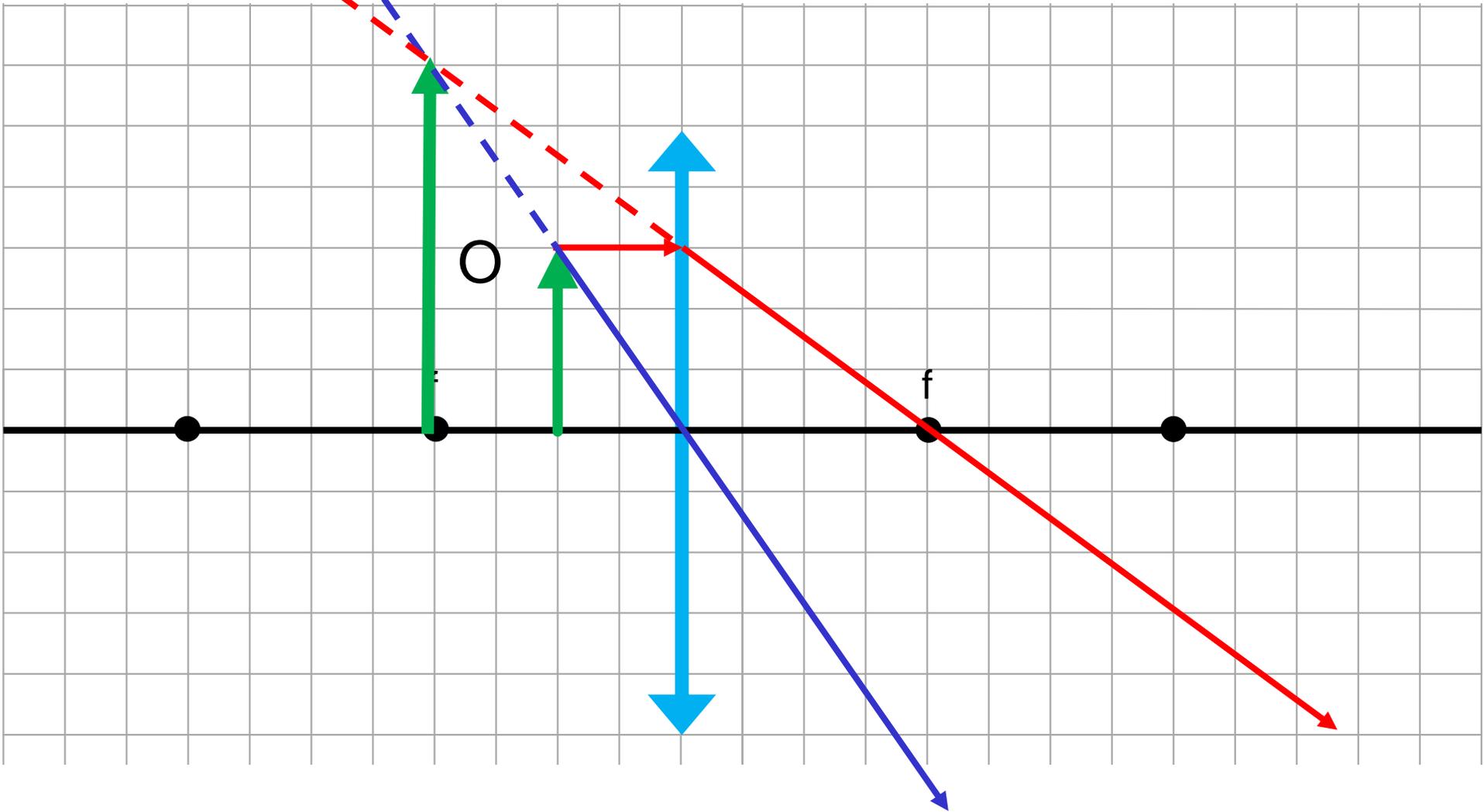


Figura 1: Objeto entre o vértice e o foco

CLASSIFICAÇÃO:

Imagem

VIRTUAL  
DIREITA  
MAIOR

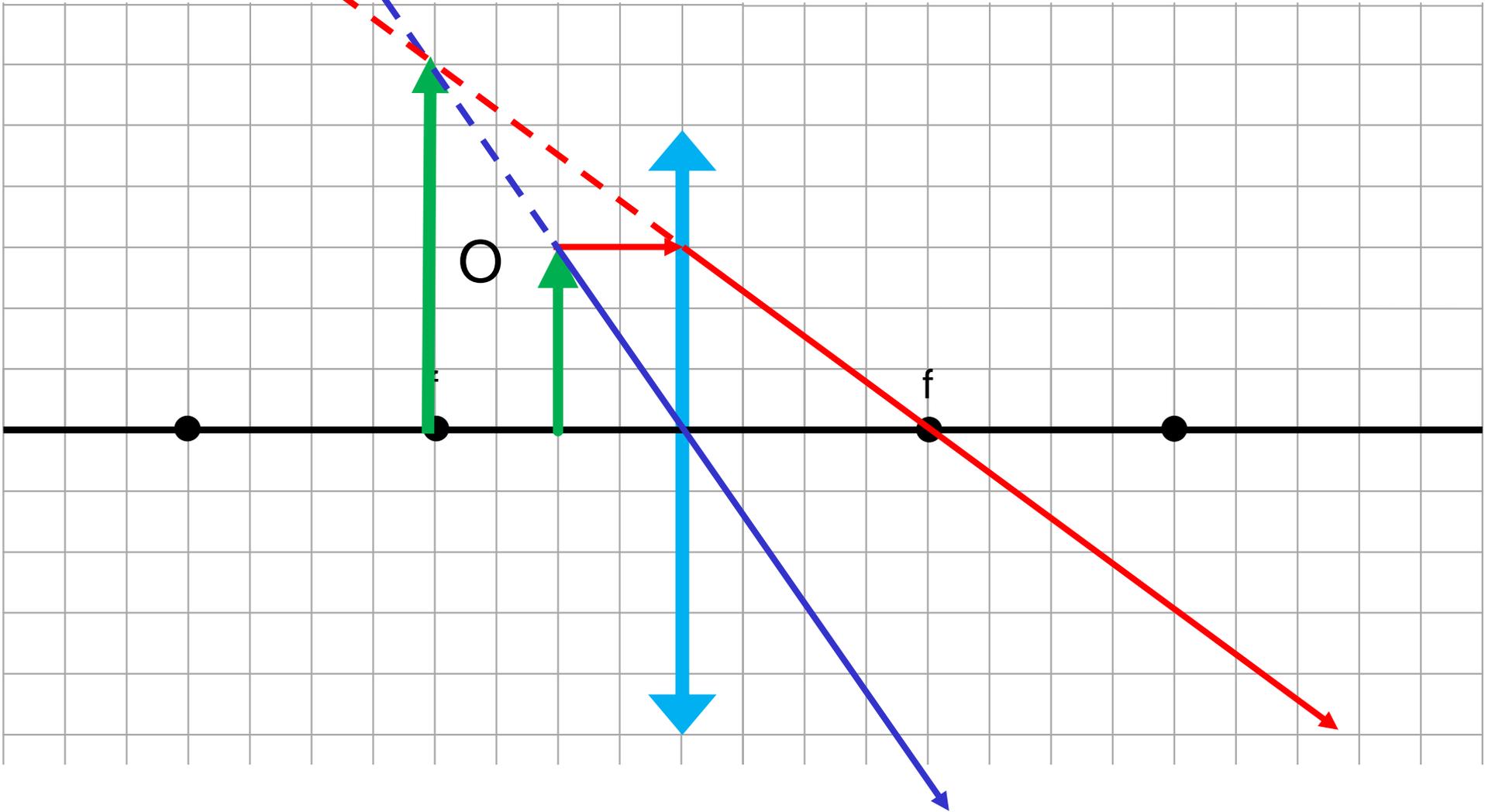


Figura 1: Objeto entre o vértice e o foco

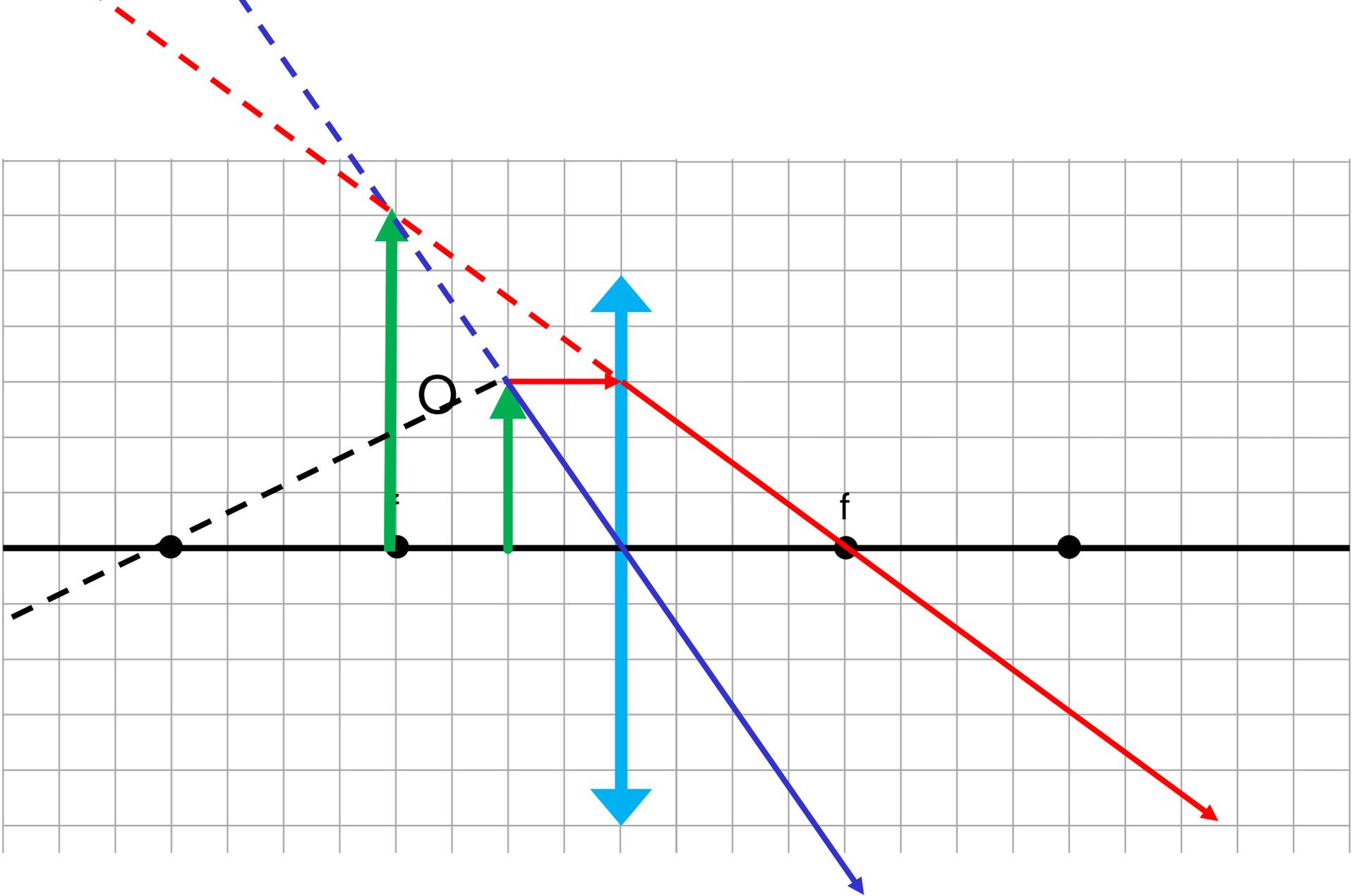


Figura 1: Objeto entre o vértice e o foco

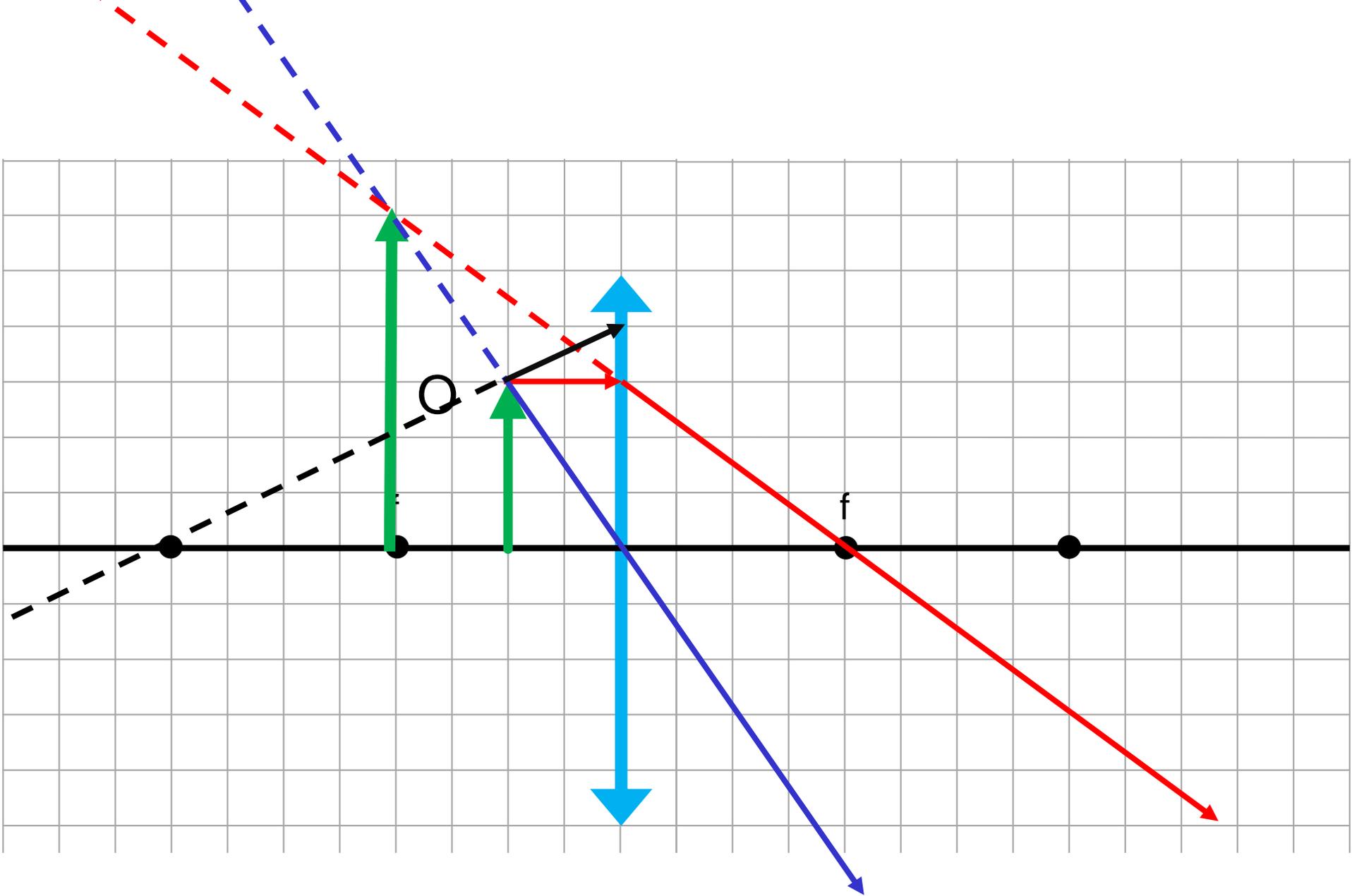


Figura 1: Objeto entre o vértice e o foco

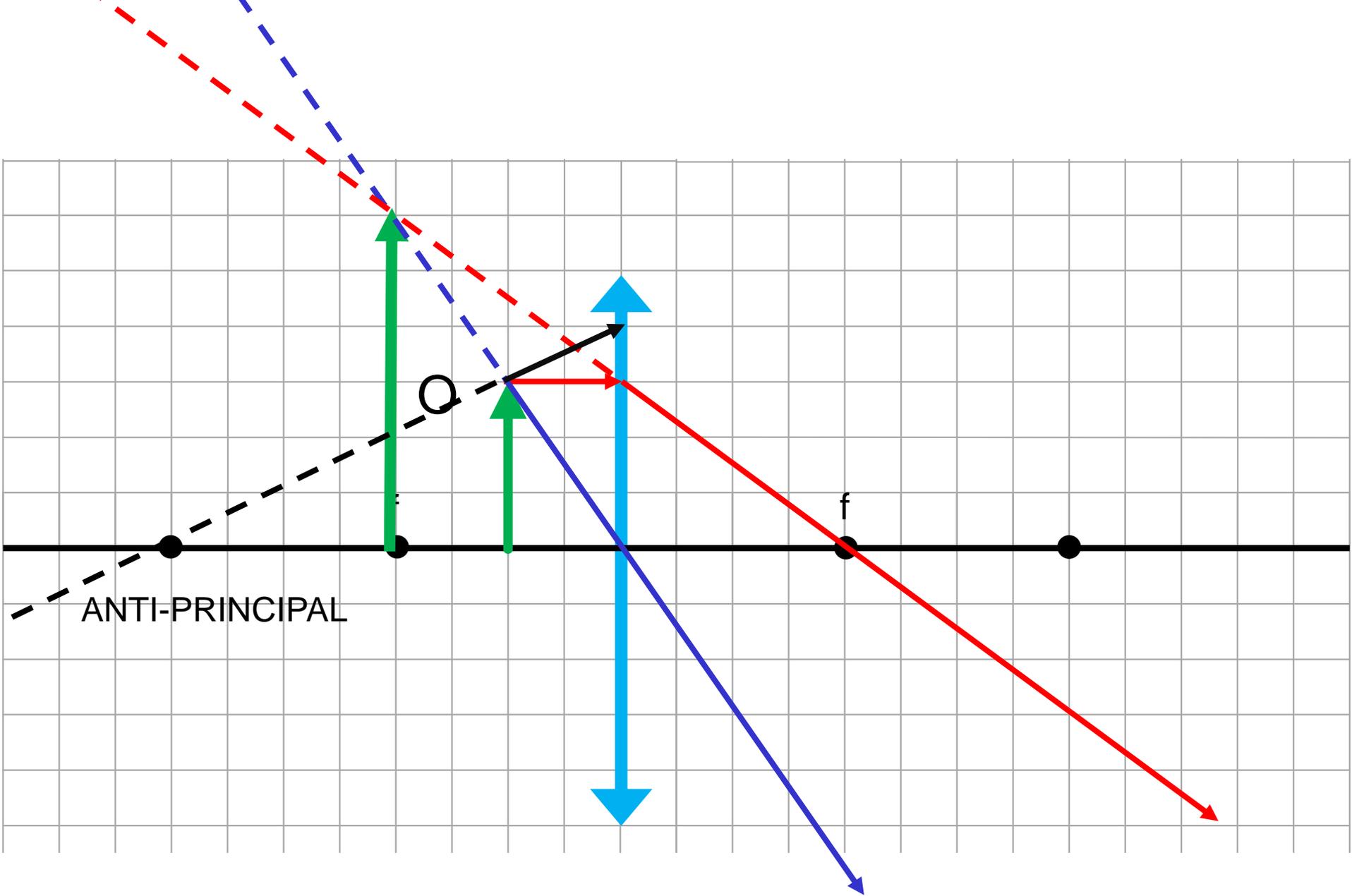


Figura 1: Objeto entre o vértice e o foco

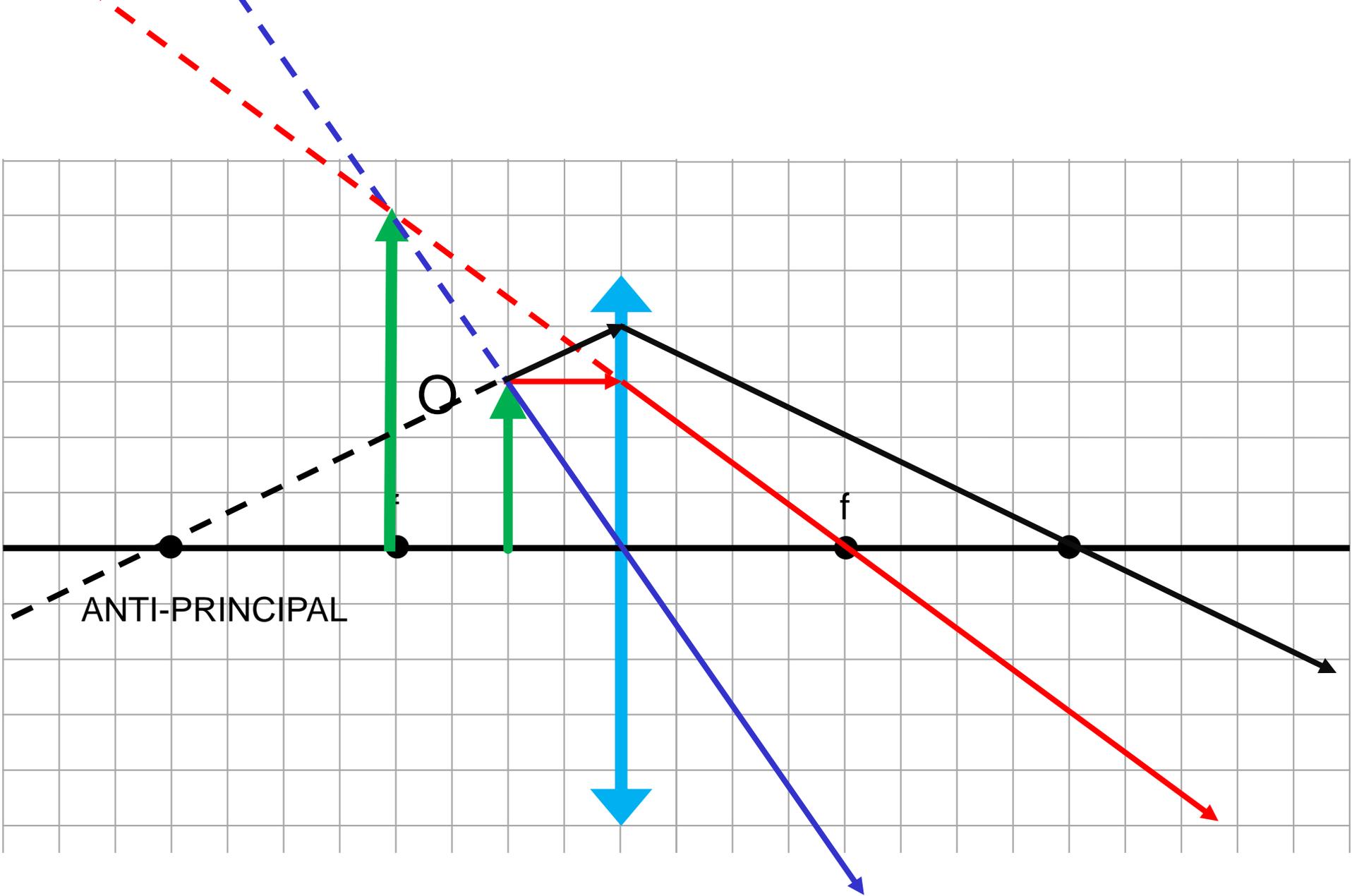


Figura 1: Objeto entre o vértice e o foco

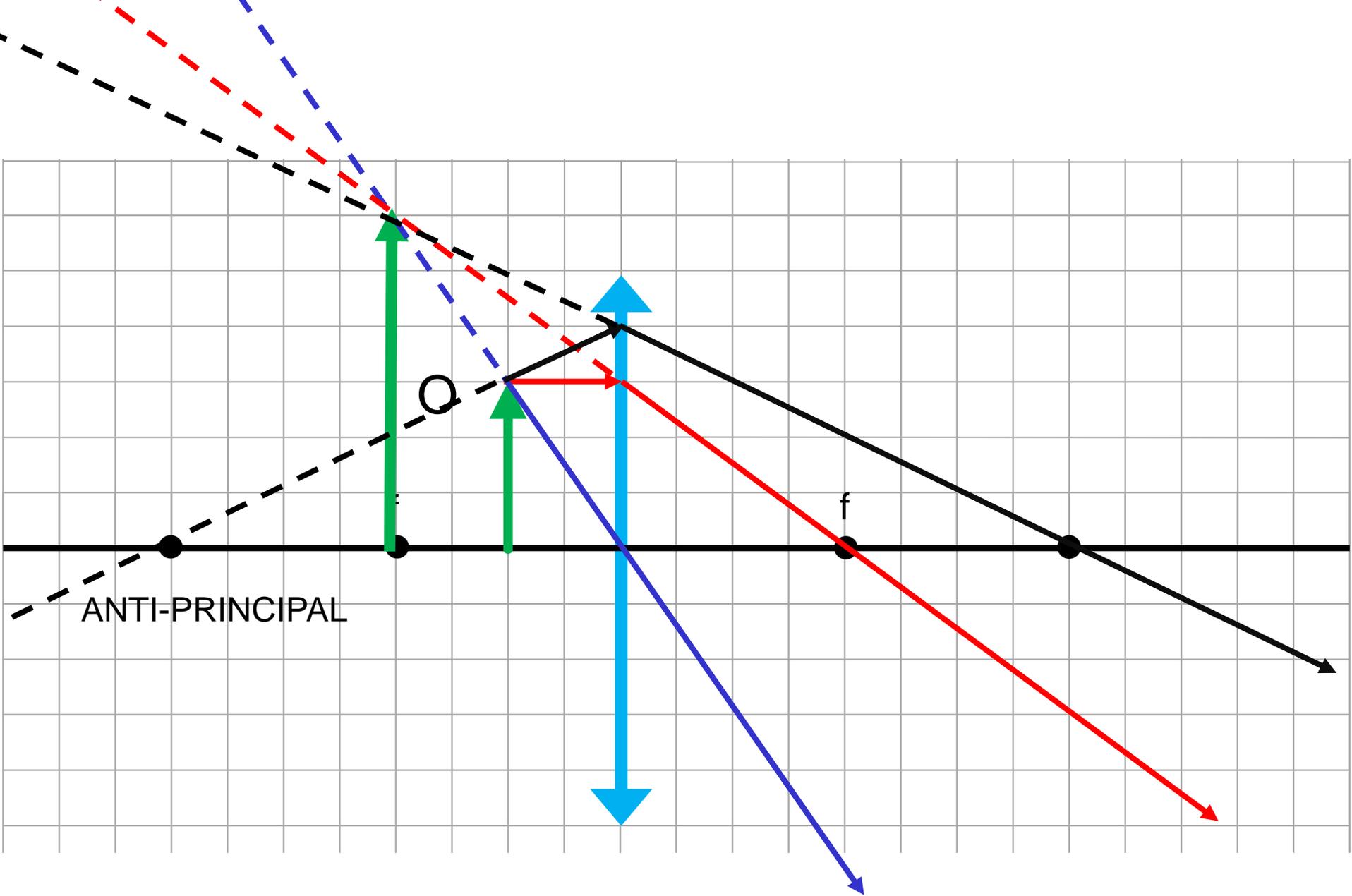


Figura 1: Objeto entre o vértice e o foco

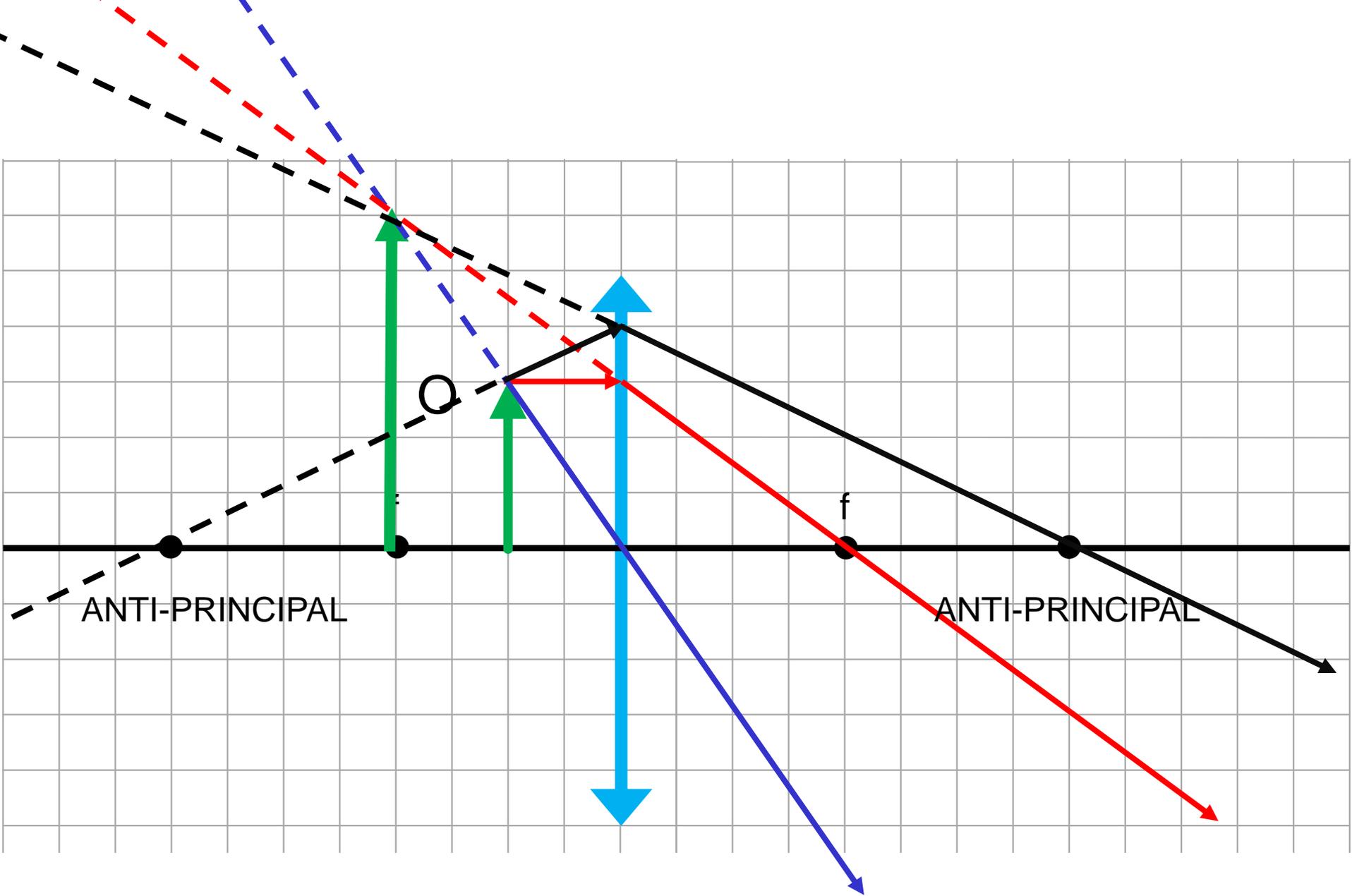


Figura 1: Objeto entre o vértice e o foco

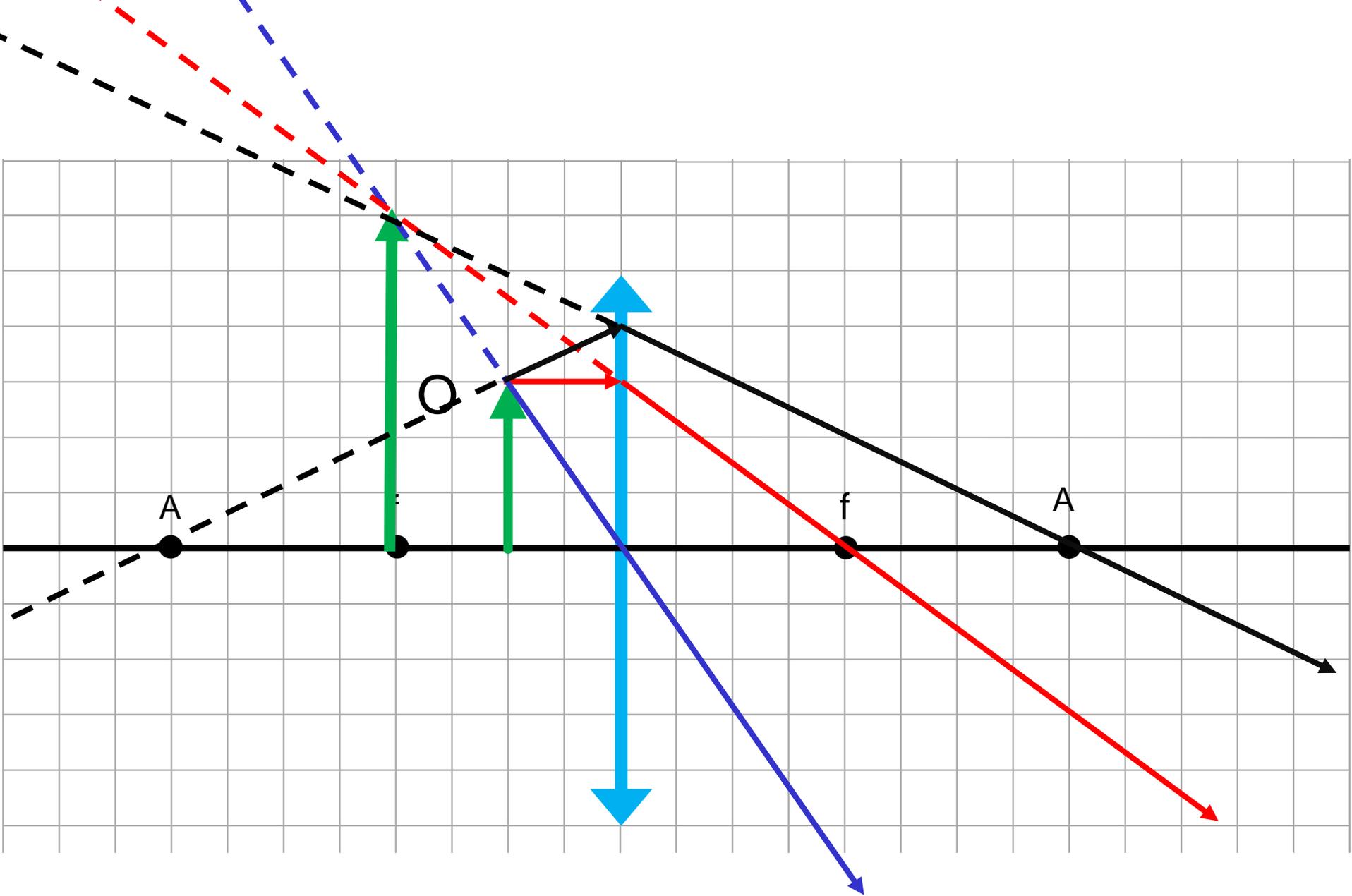
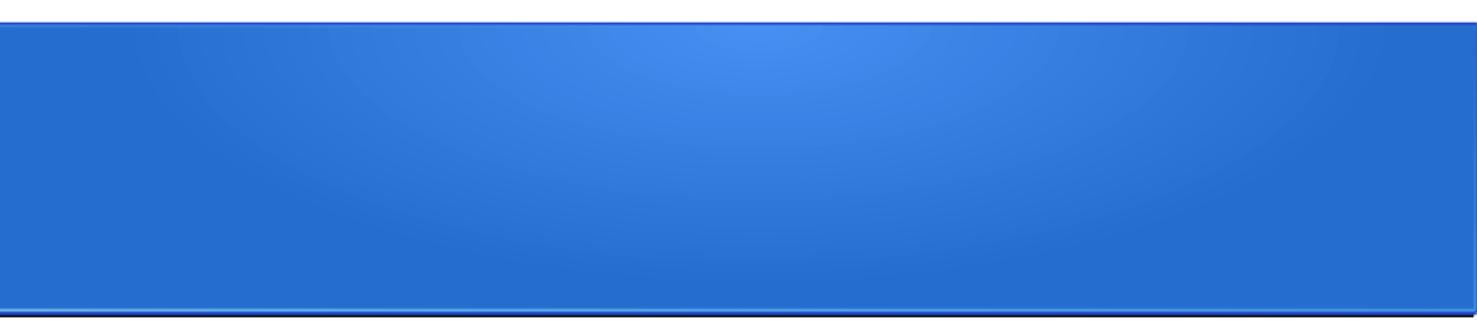


Figura 1: Objeto entre o vértice e o foco



# Segundo caso

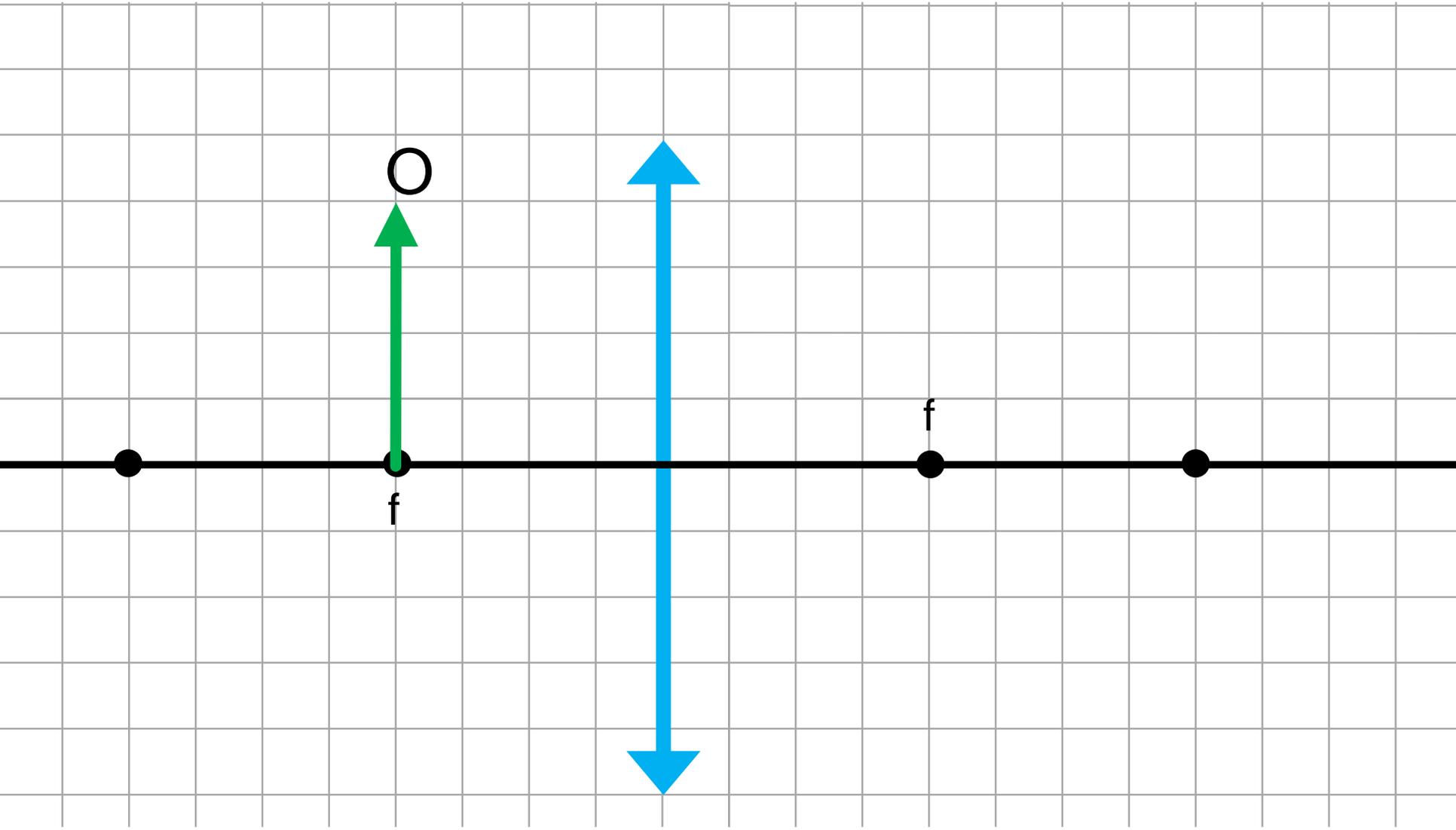


Figura 2: Objeto no foco

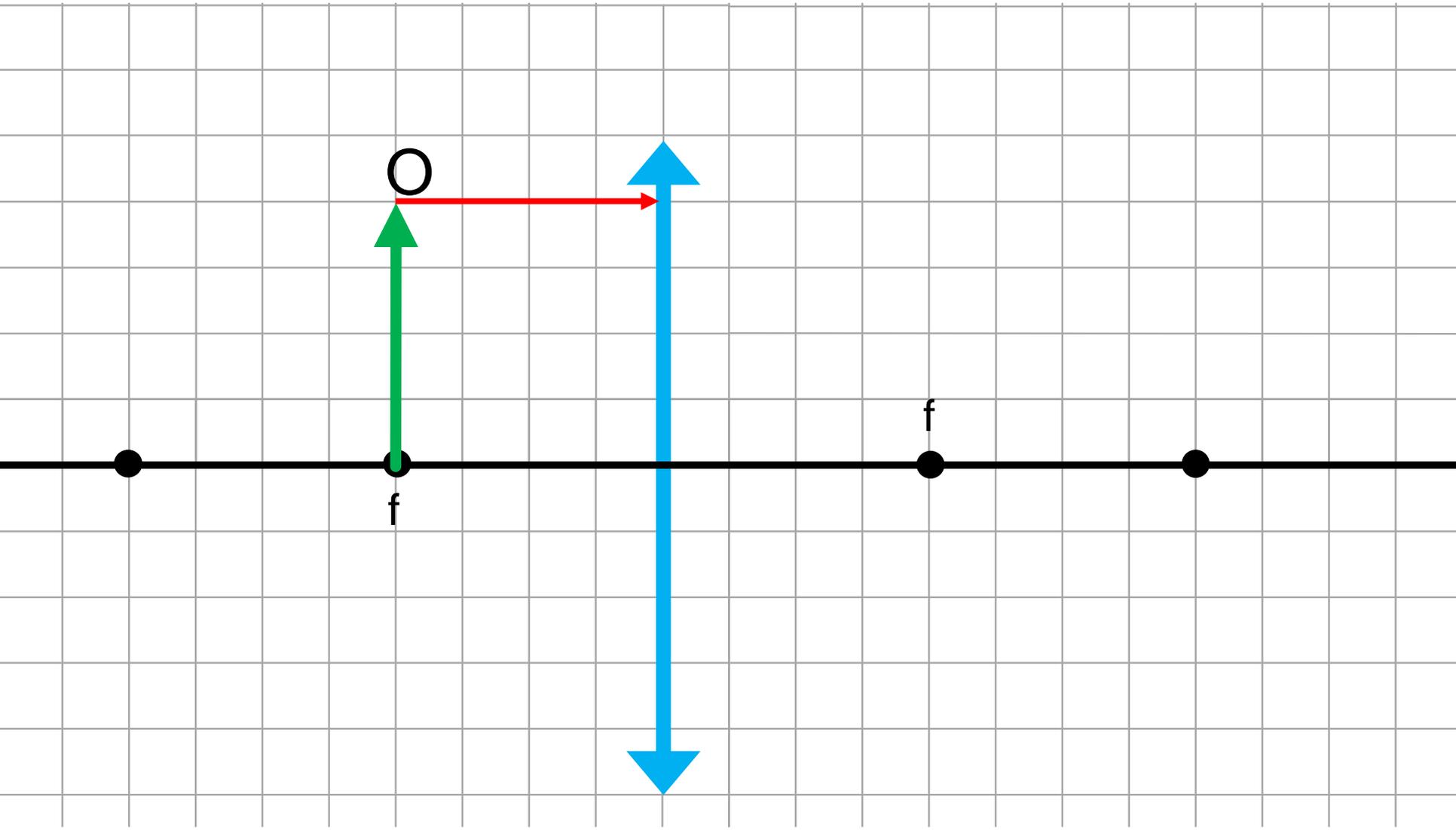


Figura 2: Objeto no foco

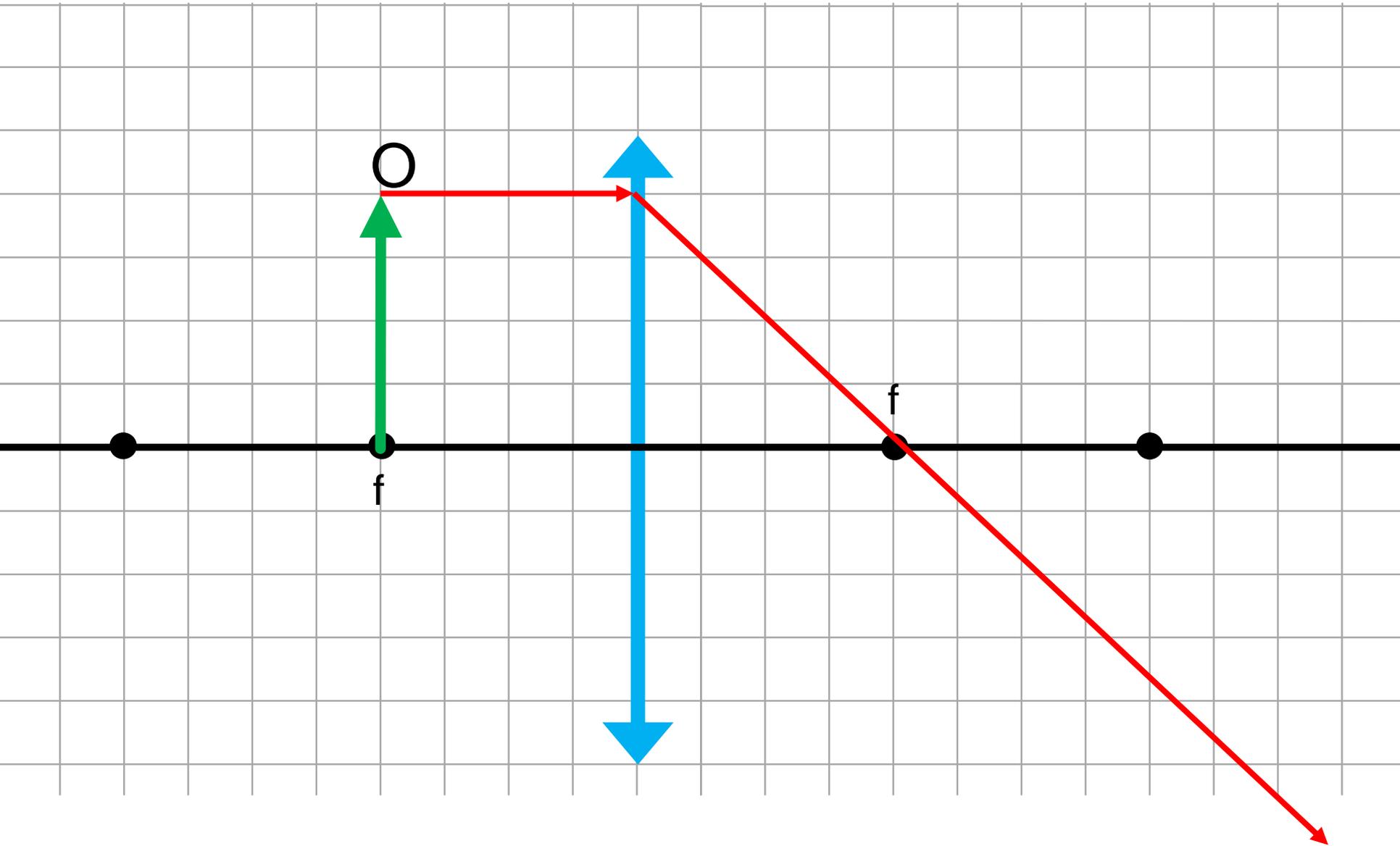


Figura 2: Objeto no foco

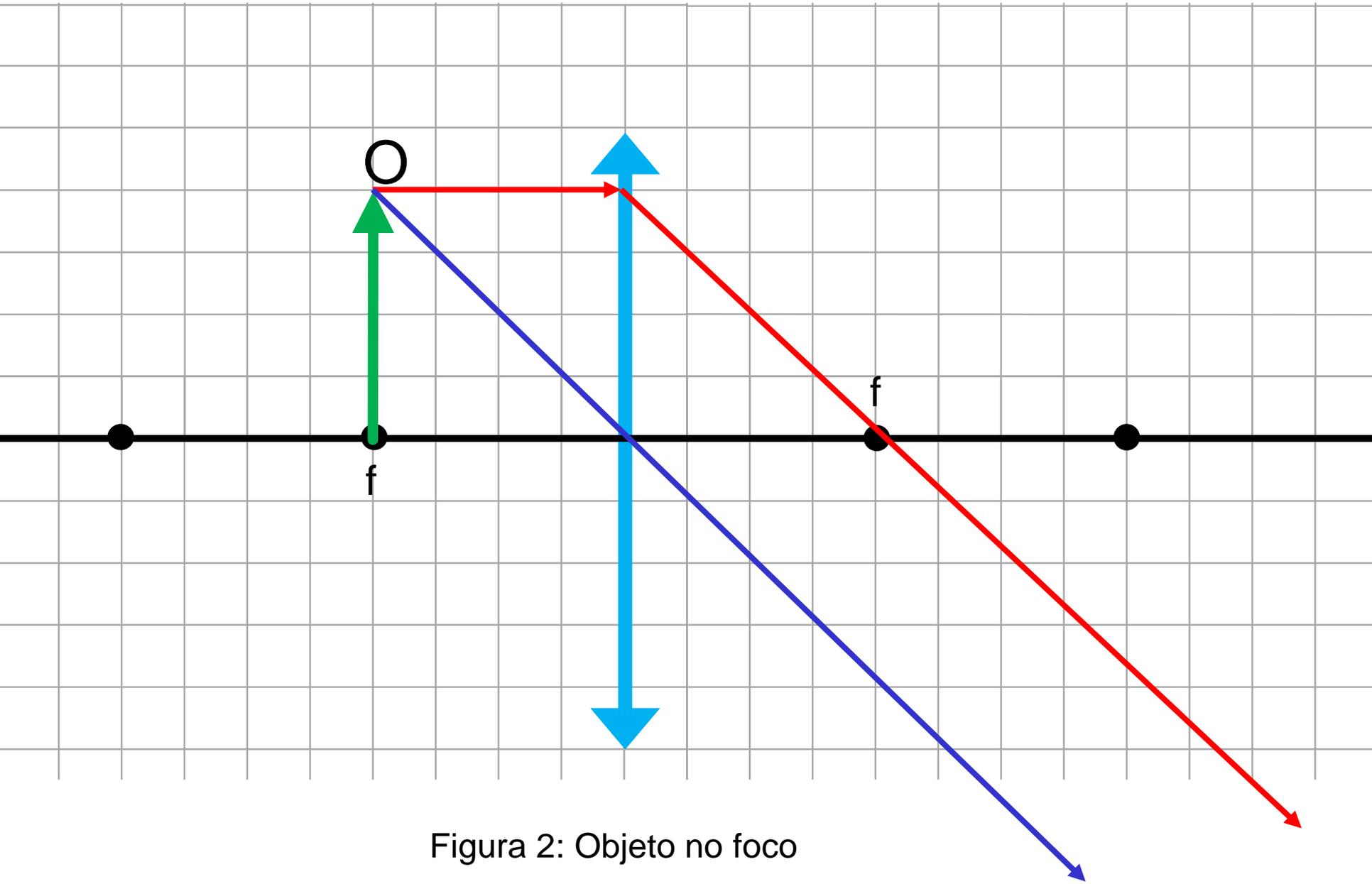


Figura 2: Objeto no foco

# IMAGEM IMPRÓPRIA

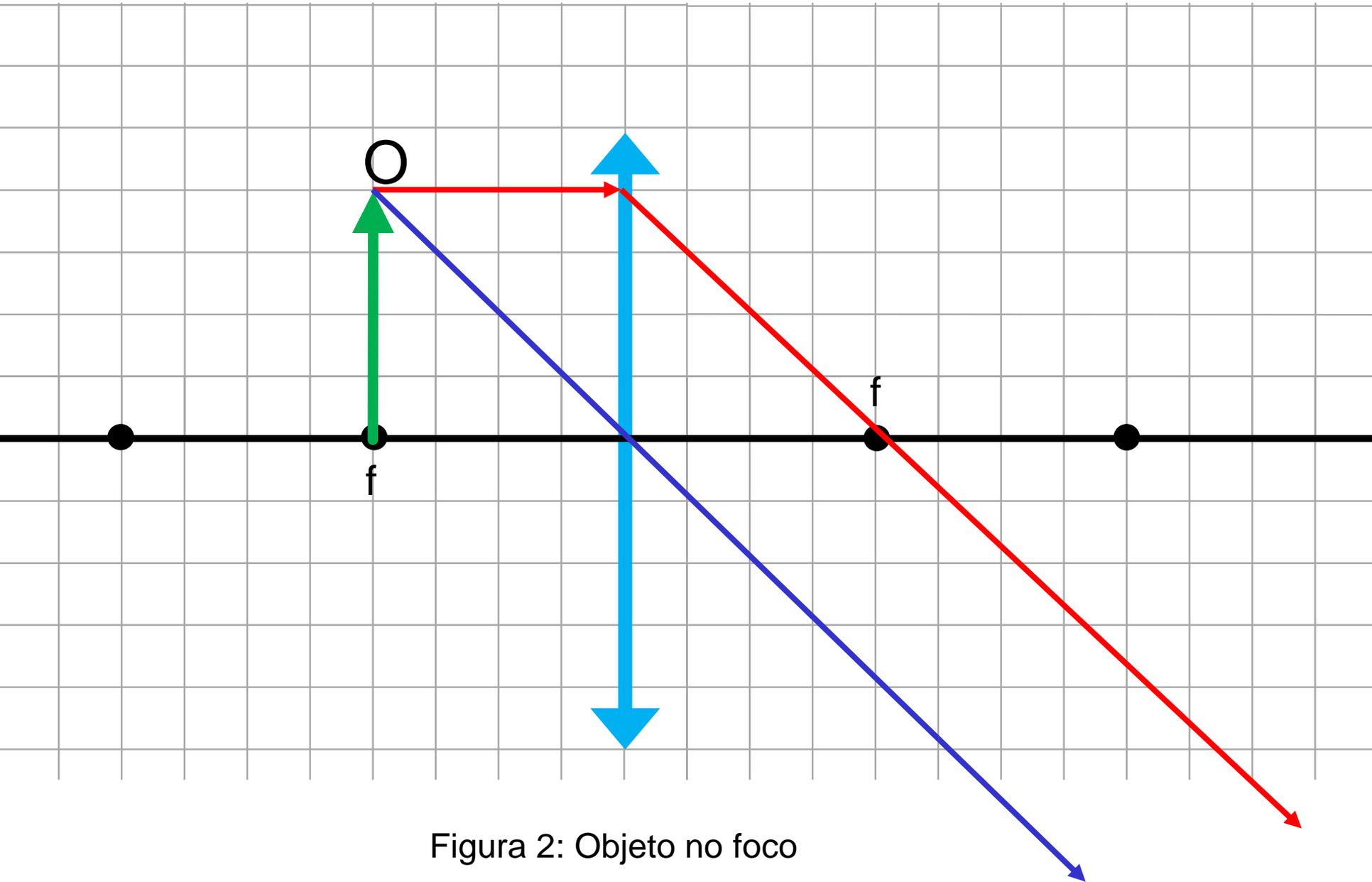
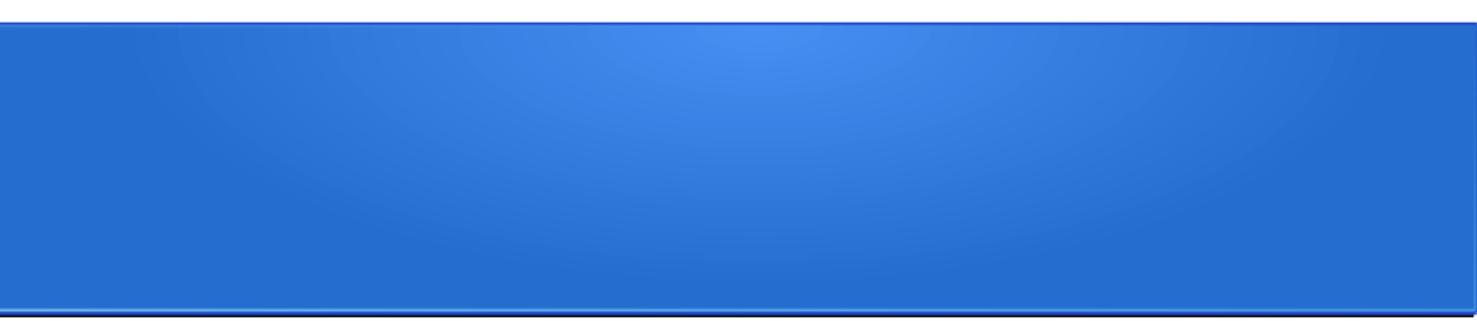


Figura 2: Objeto no foco



# Terceiro caso

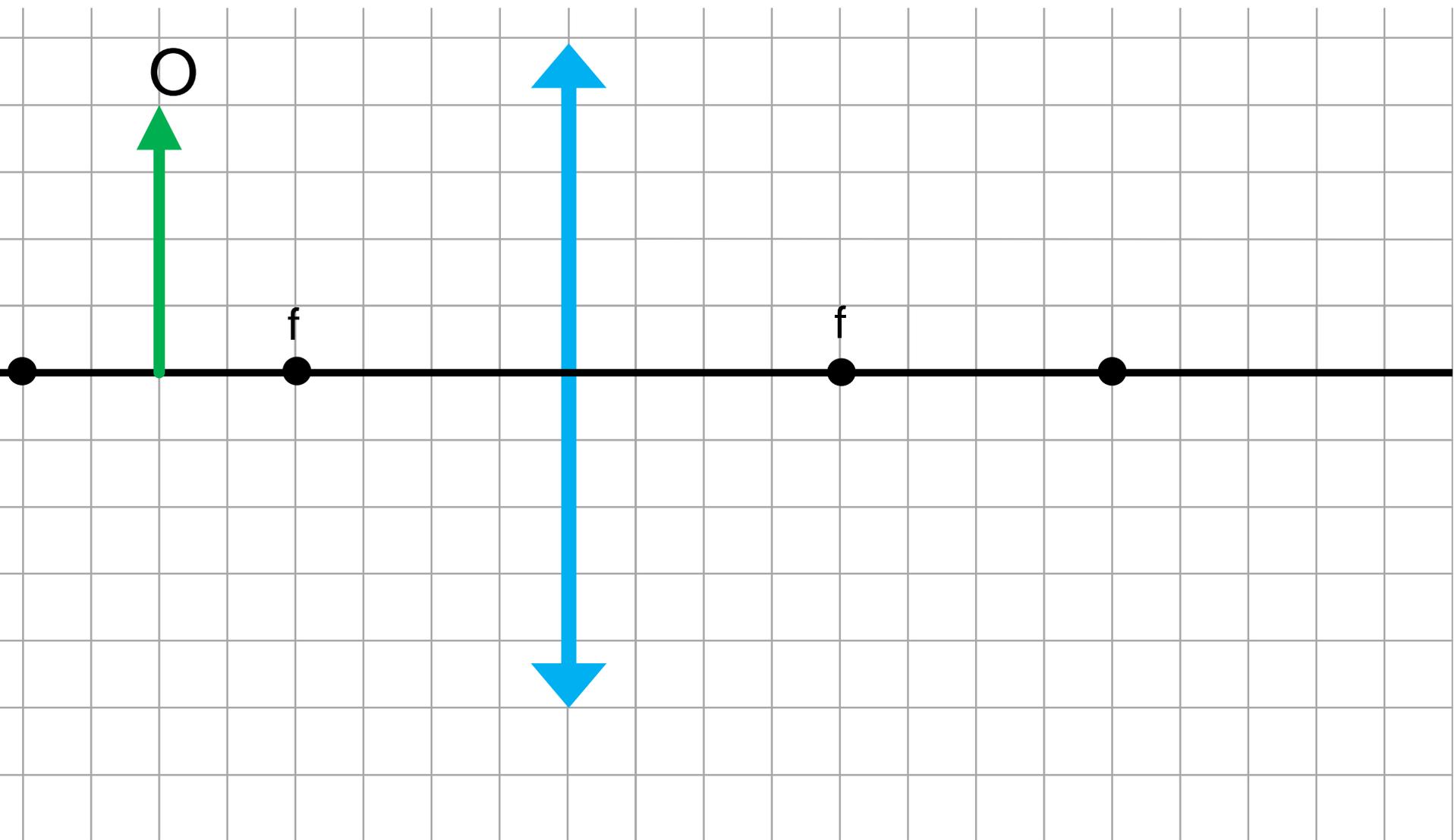


Figura 3: Objeto entre o foco e o anti-principal

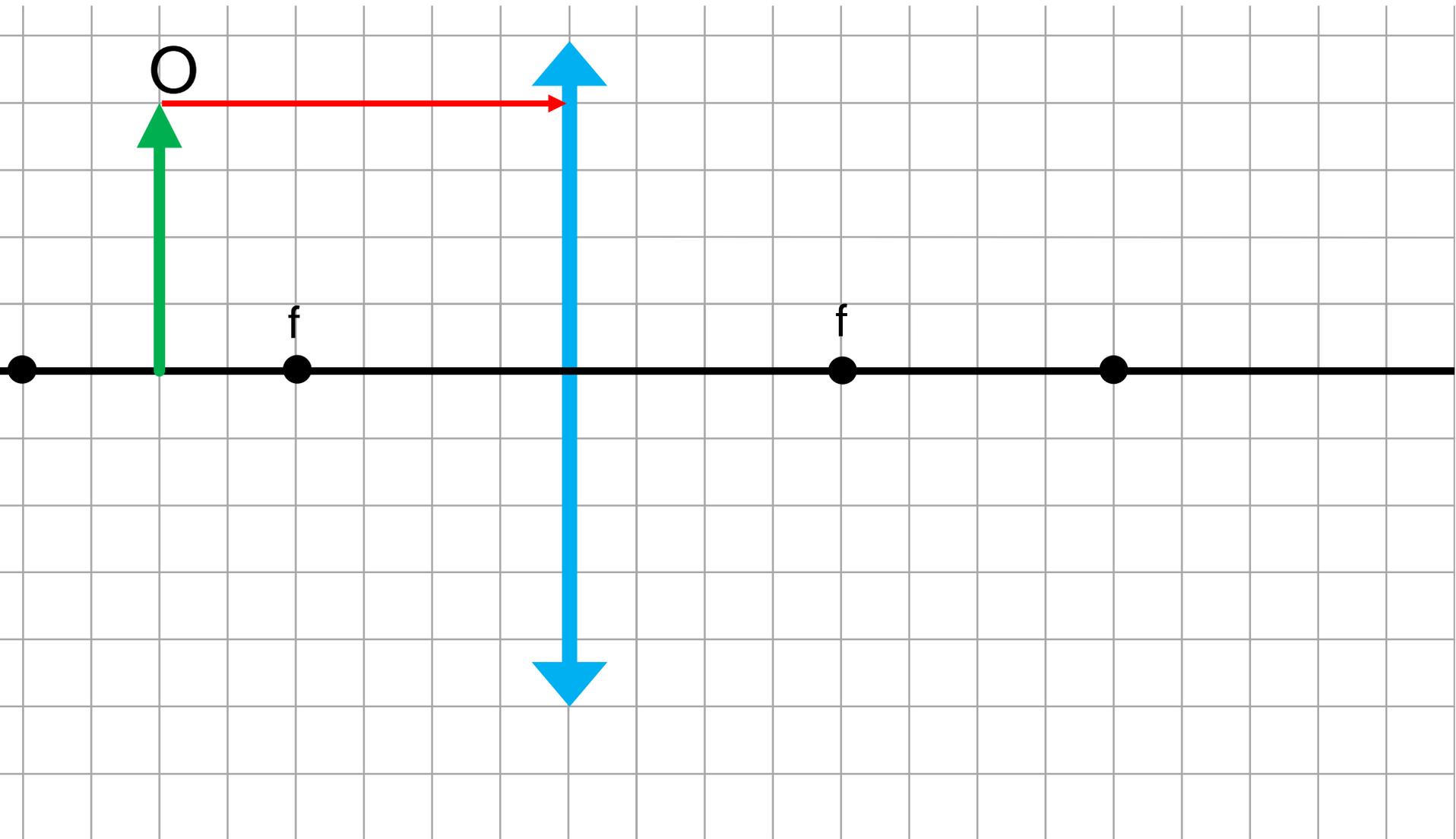


Figura 3: Objeto entre o foco e o anti-principal

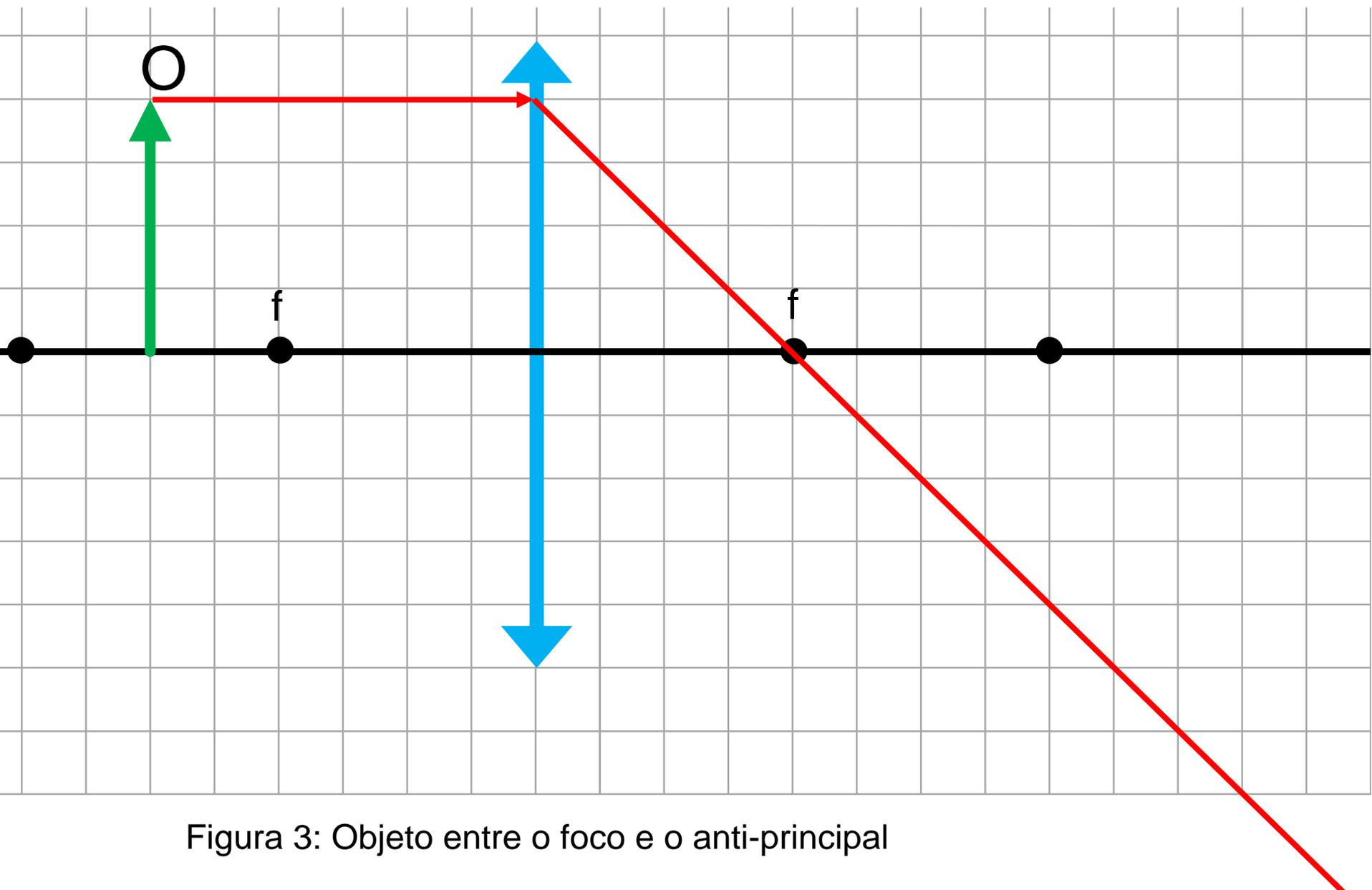


Figura 3: Objeto entre o foco e o anti-principal

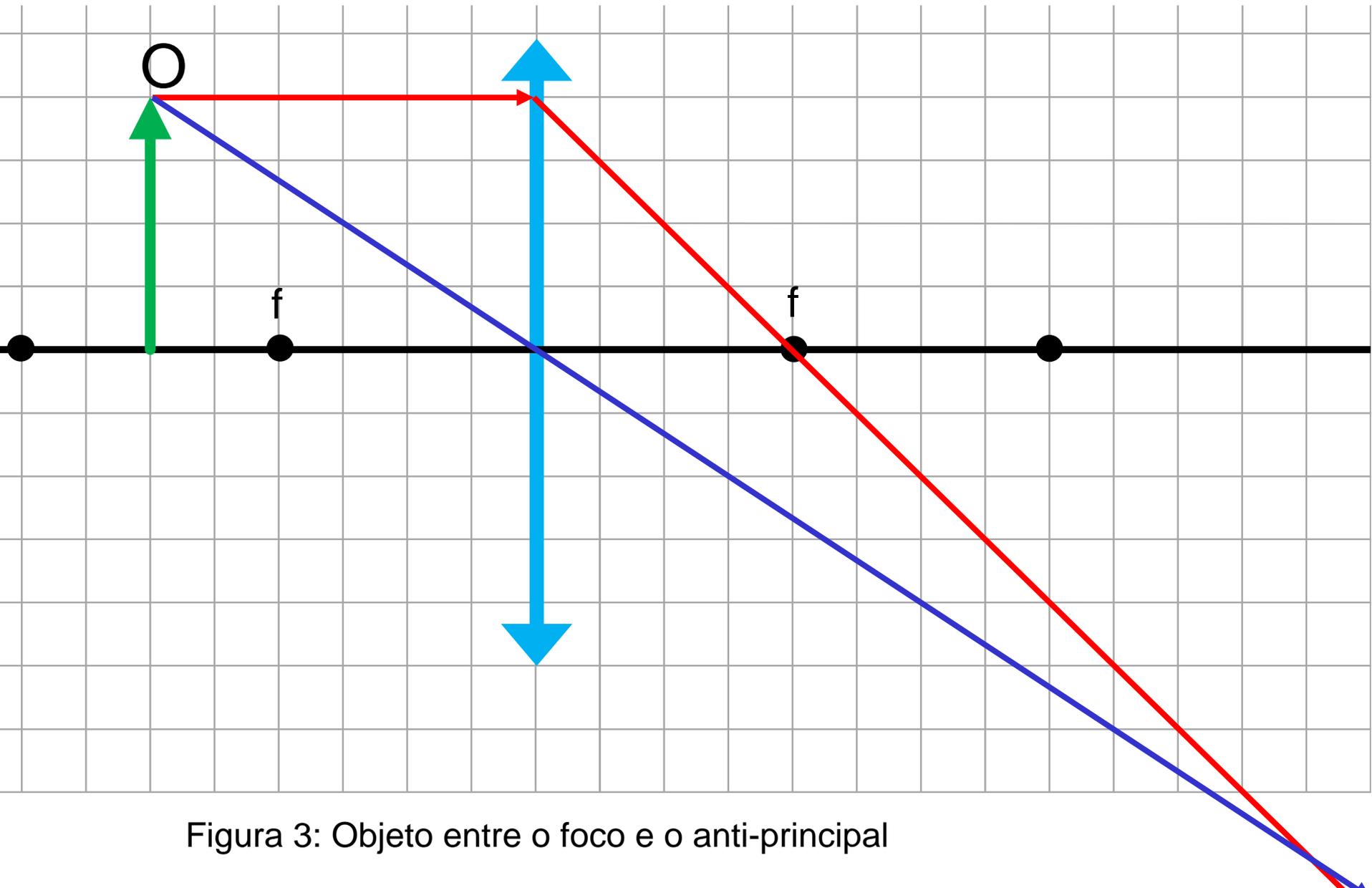


Figura 3: Objeto entre o foco e o anti-principal

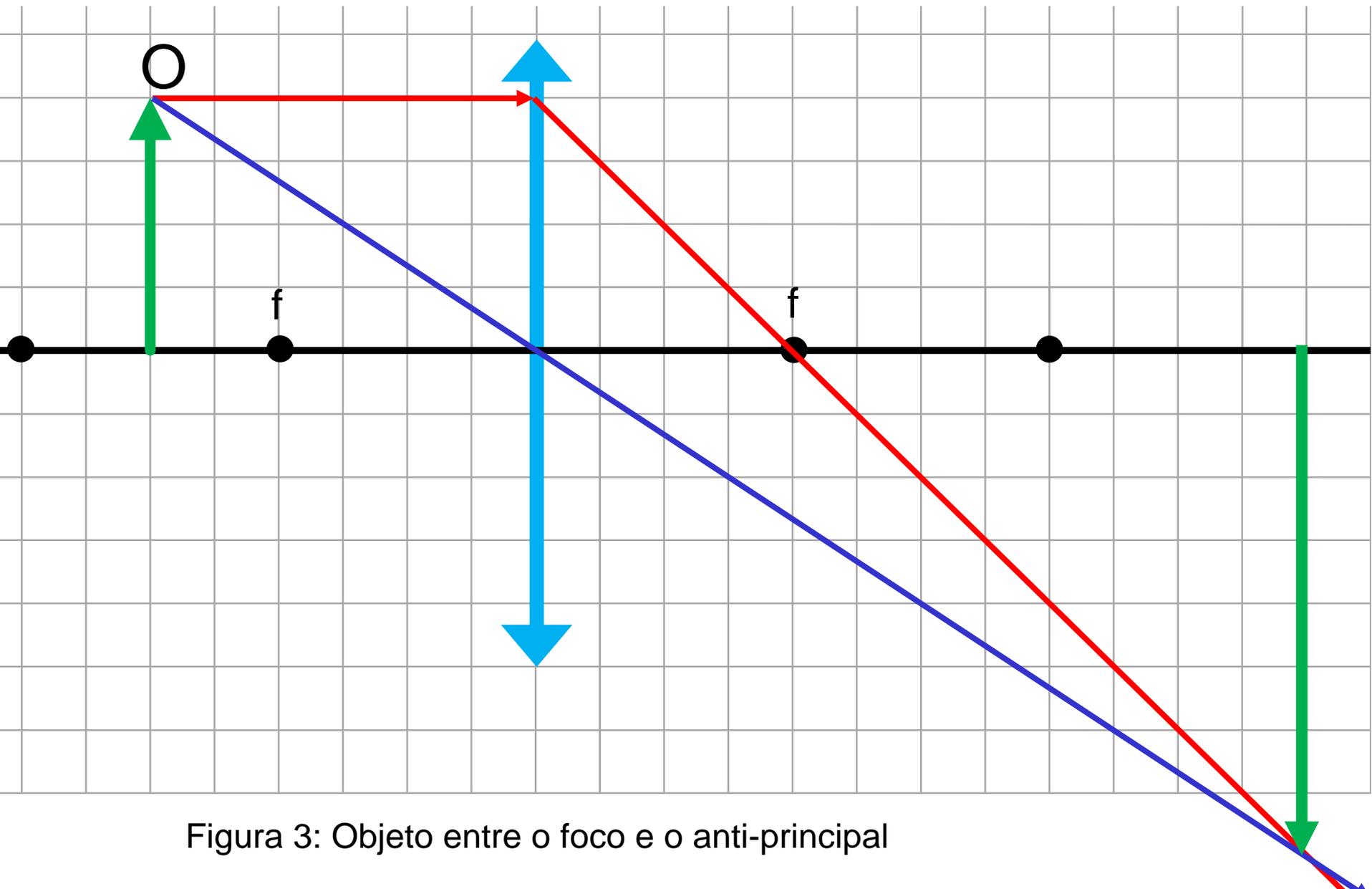


Figura 3: Objeto entre o foco e o anti-principal

CLASSIFICAÇÃO: Imagem REAL

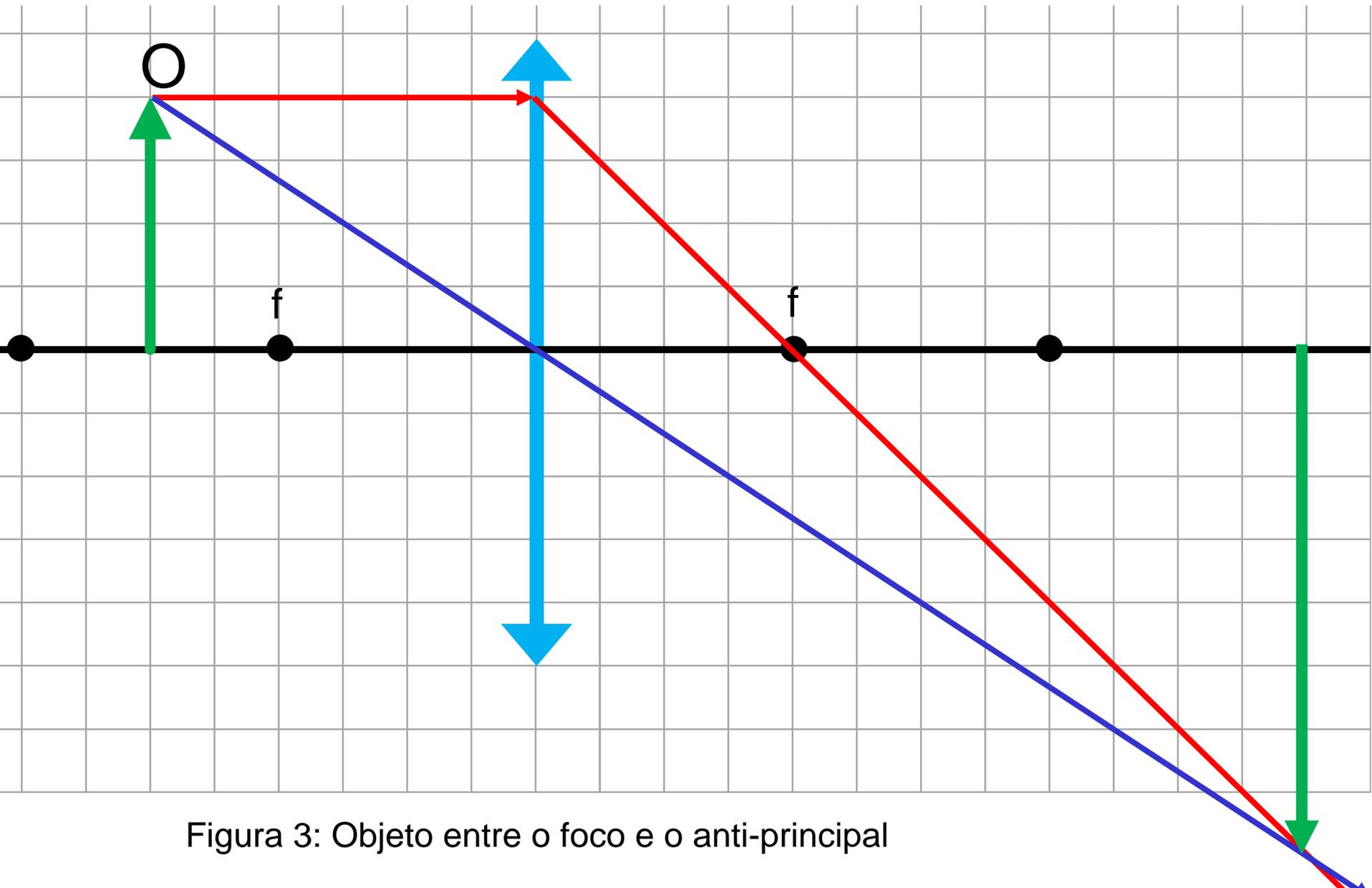


Figura 3: Objeto entre o foco e o anti-principal

CLASSIFICAÇÃO:

Imagem

REAL

INVERTIDA

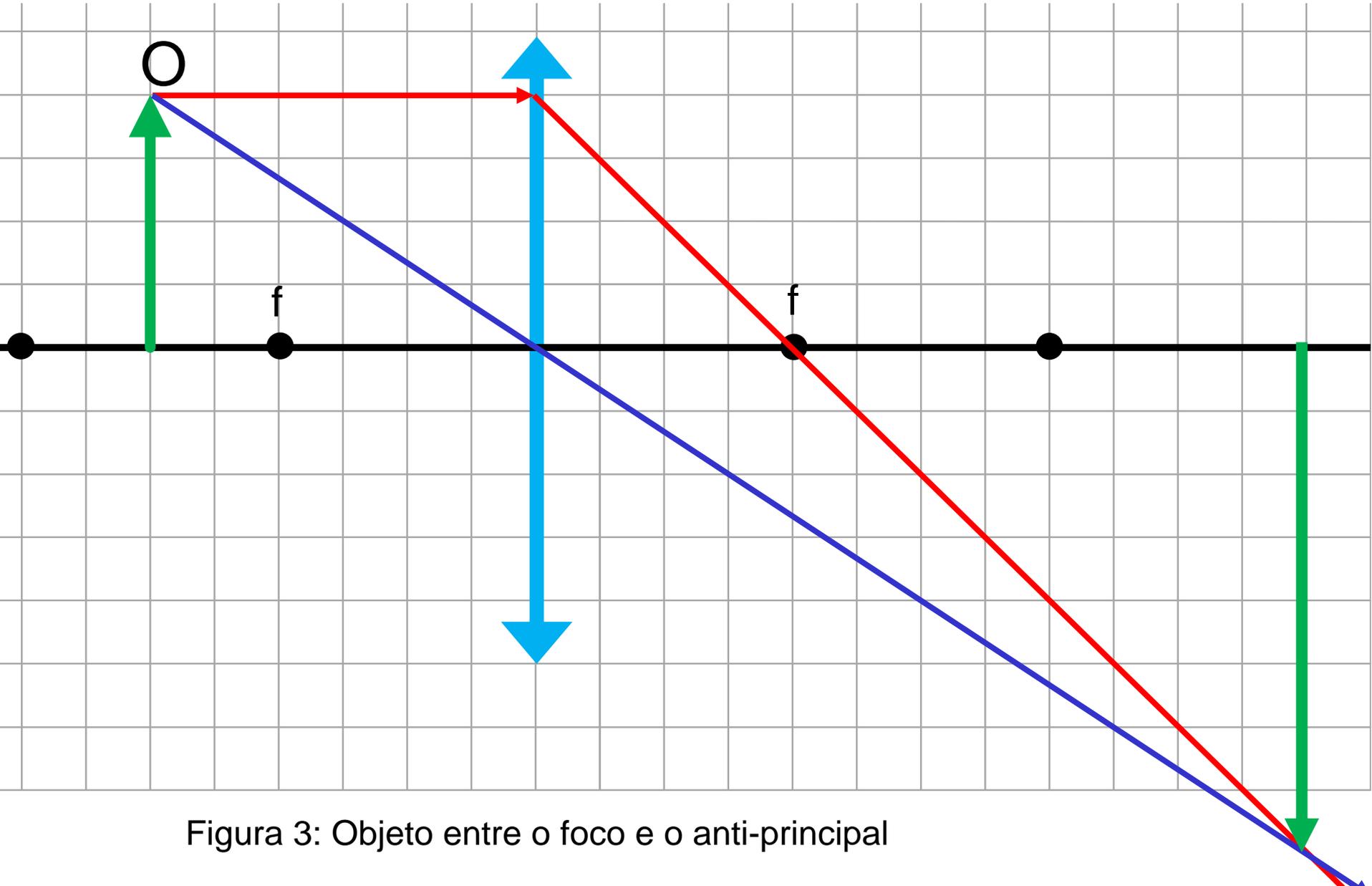


Figura 3: Objeto entre o foco e o anti-principal

CLASSIFICAÇÃO:

Imagem

REAL

INVERTIDA

MAIOR

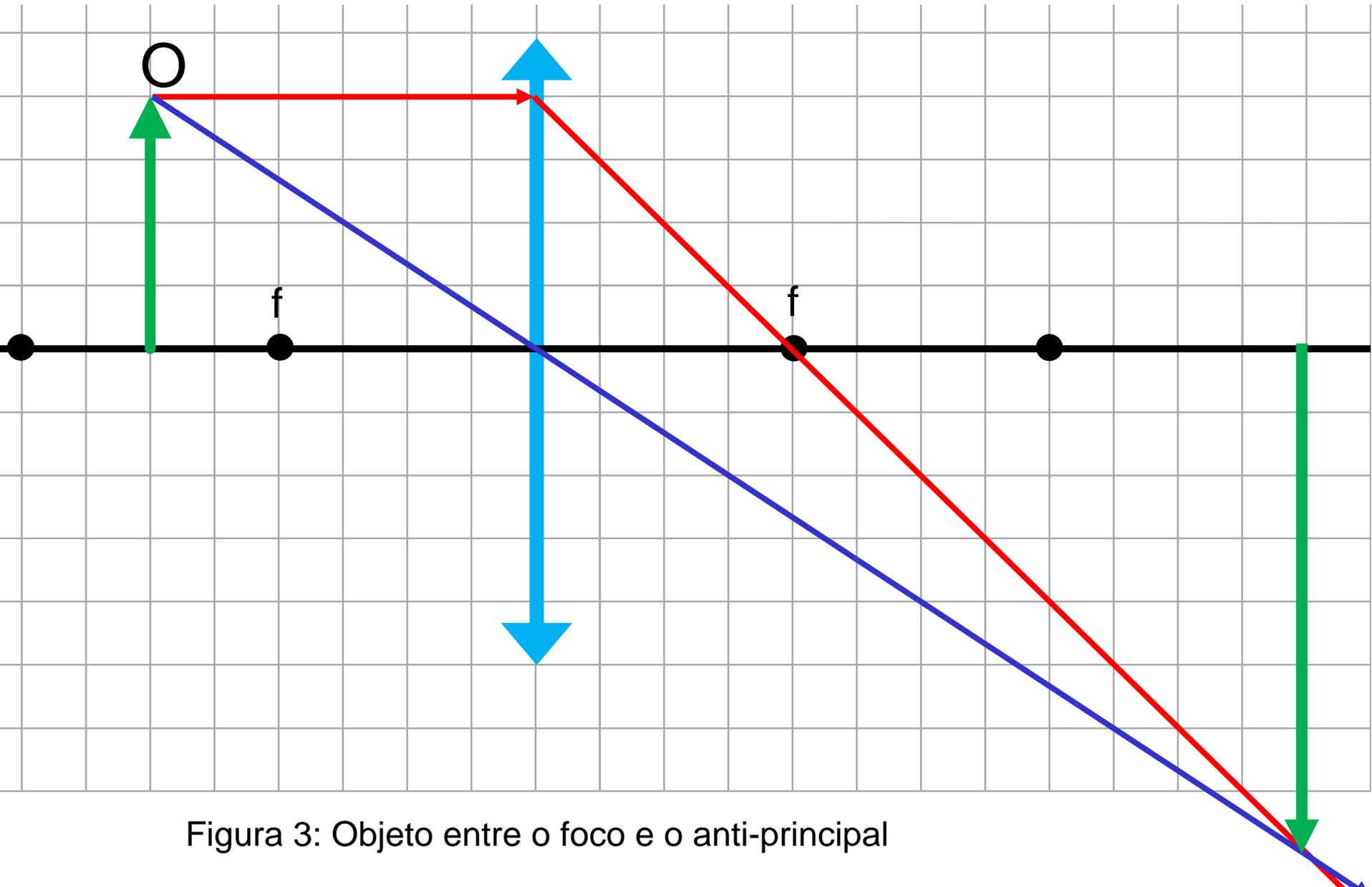
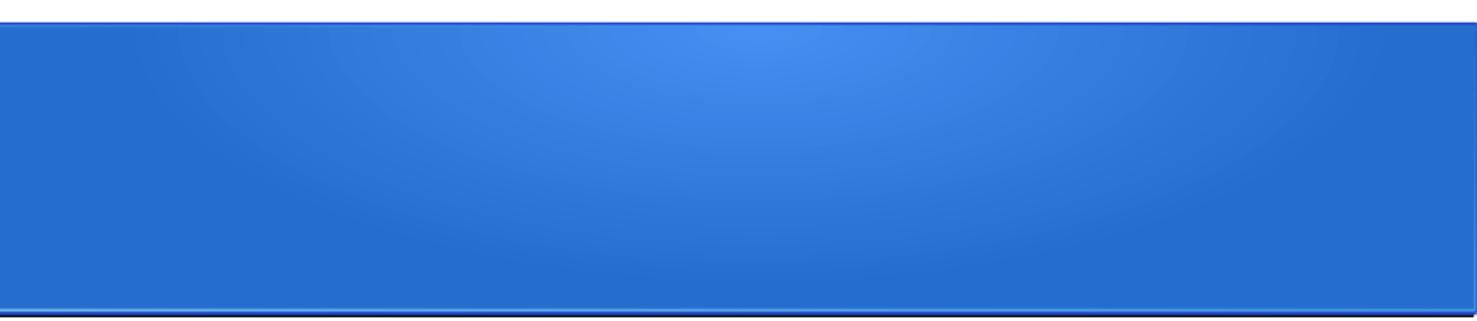


Figura 3: Objeto entre o foco e o anti-principal



Quarto caso

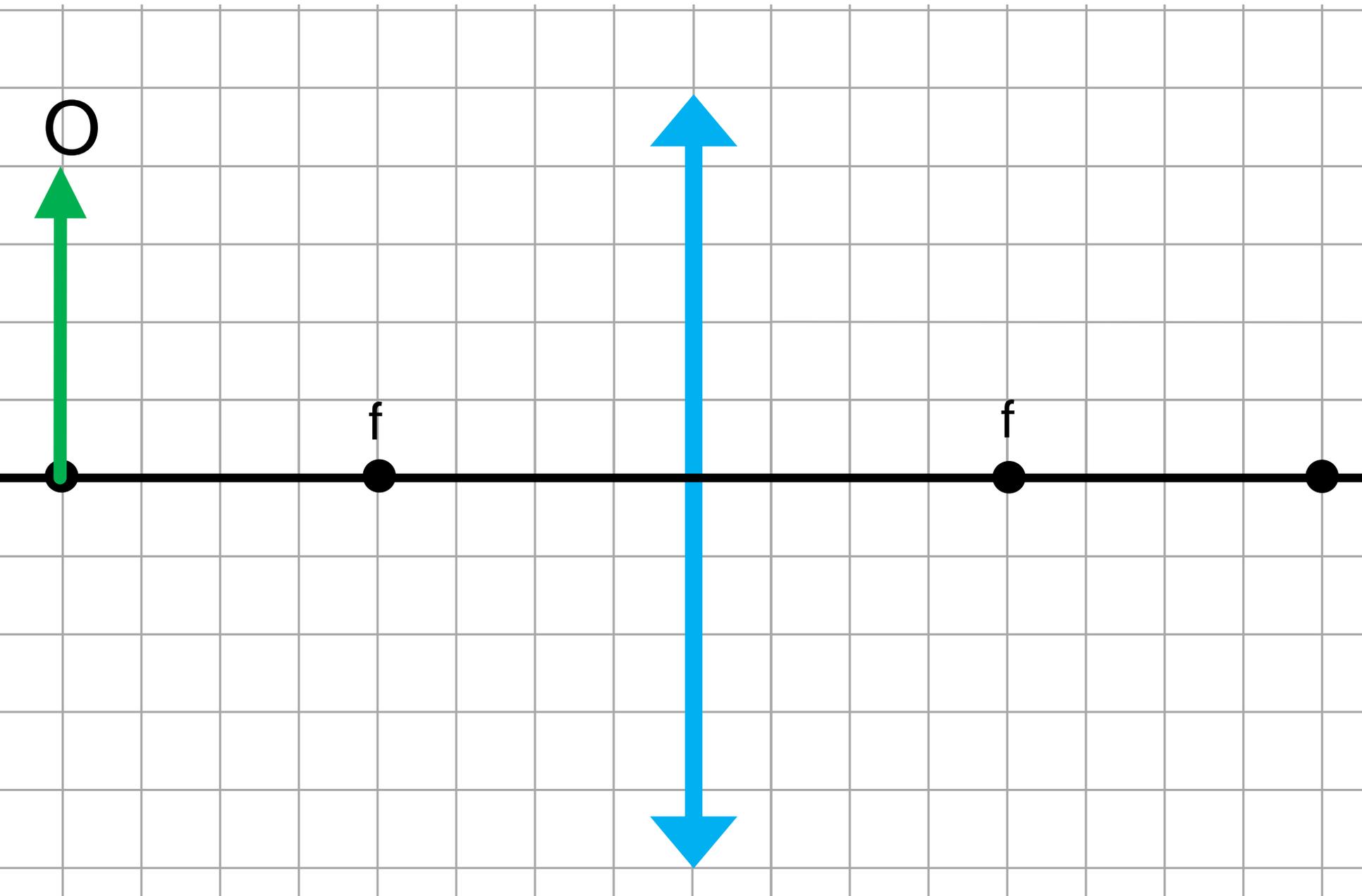


Figura 4: Objeto no anti-principal

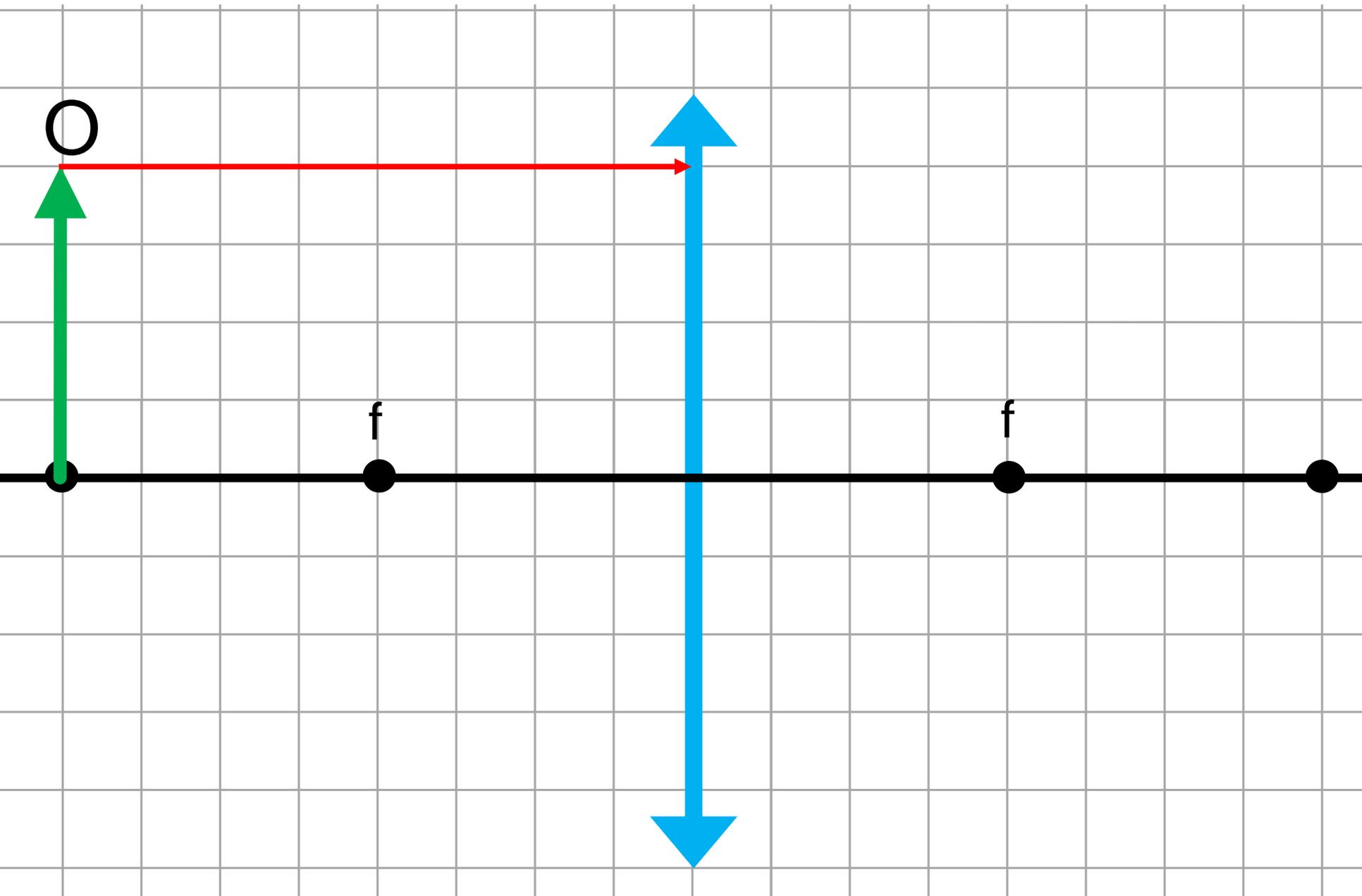


Figura 4: Objeto no anti-principal

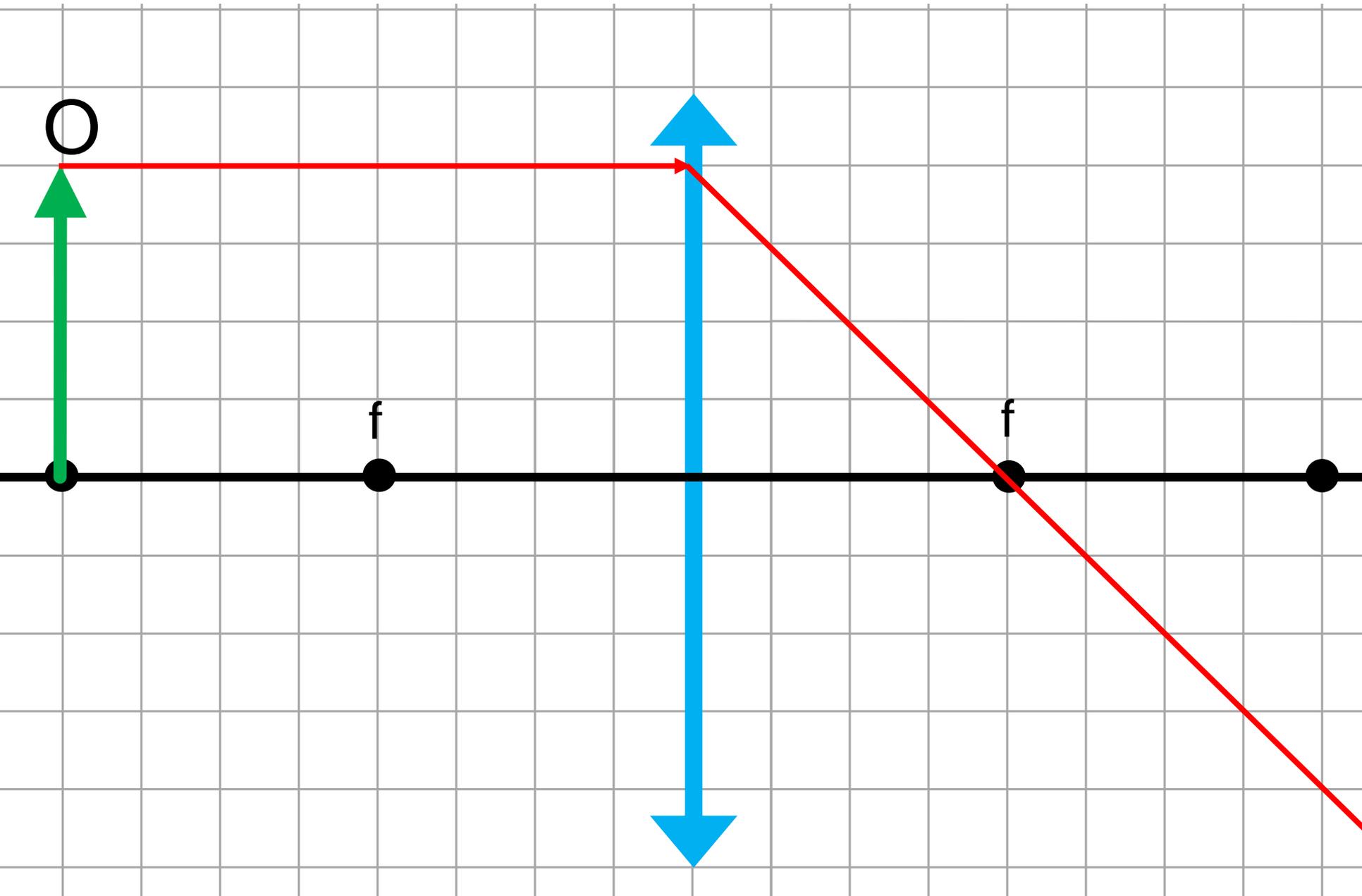


Figura 4: Objeto no anti-principal

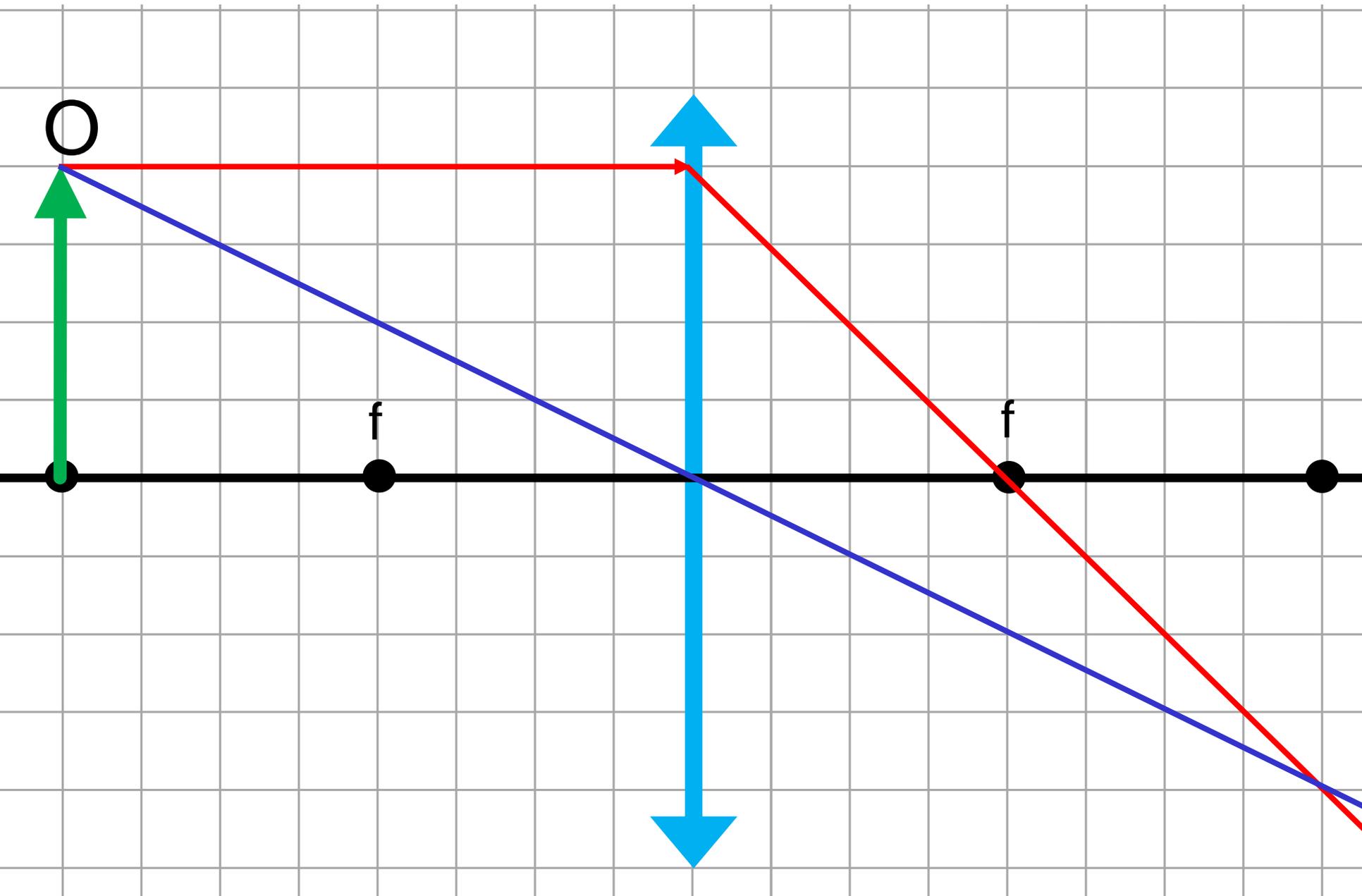


Figura 4: Objeto no anti-principal

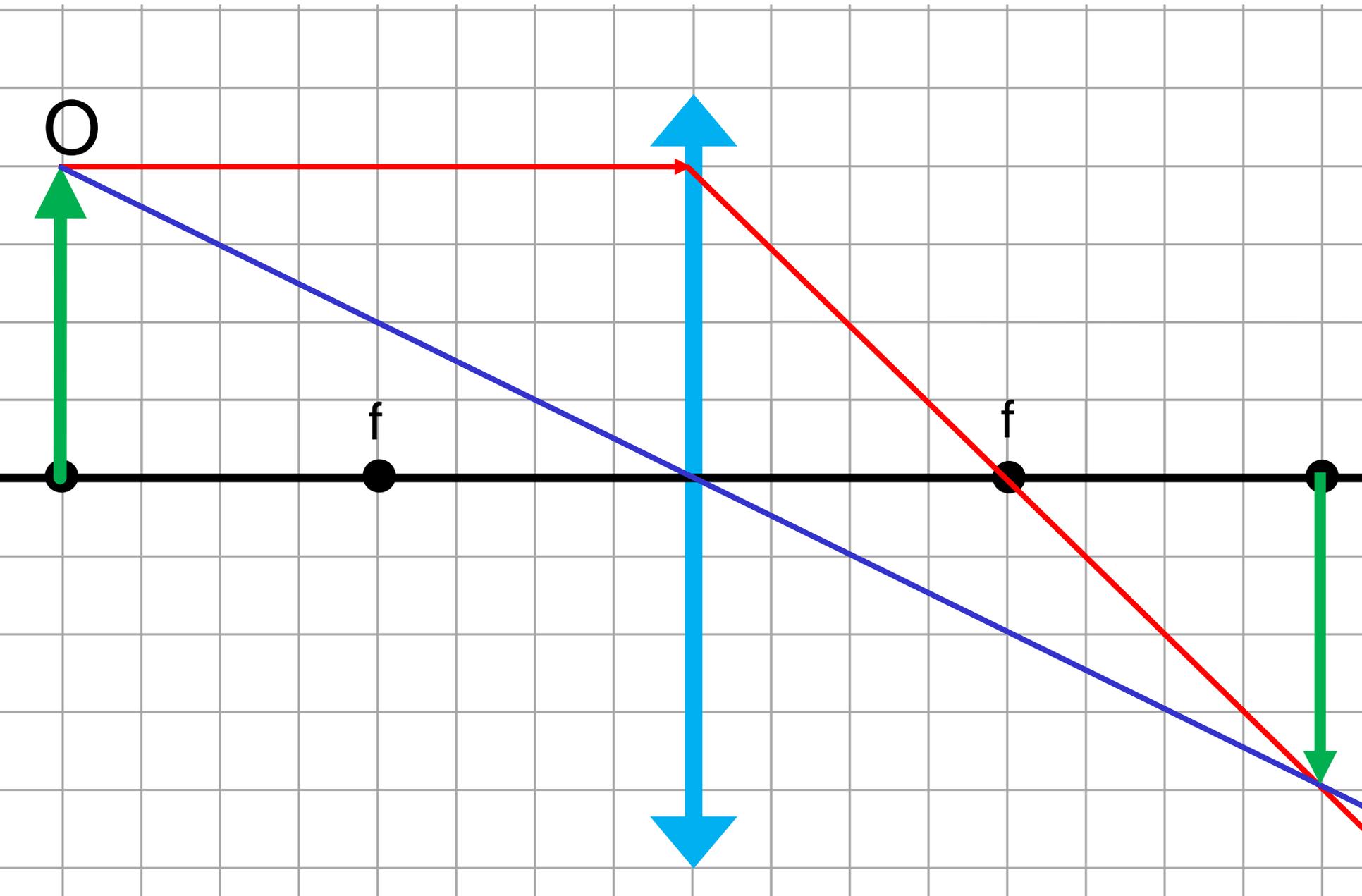


Figura 4: Objeto no anti-principal

CLASSIFICAÇÃO: Imagem REAL

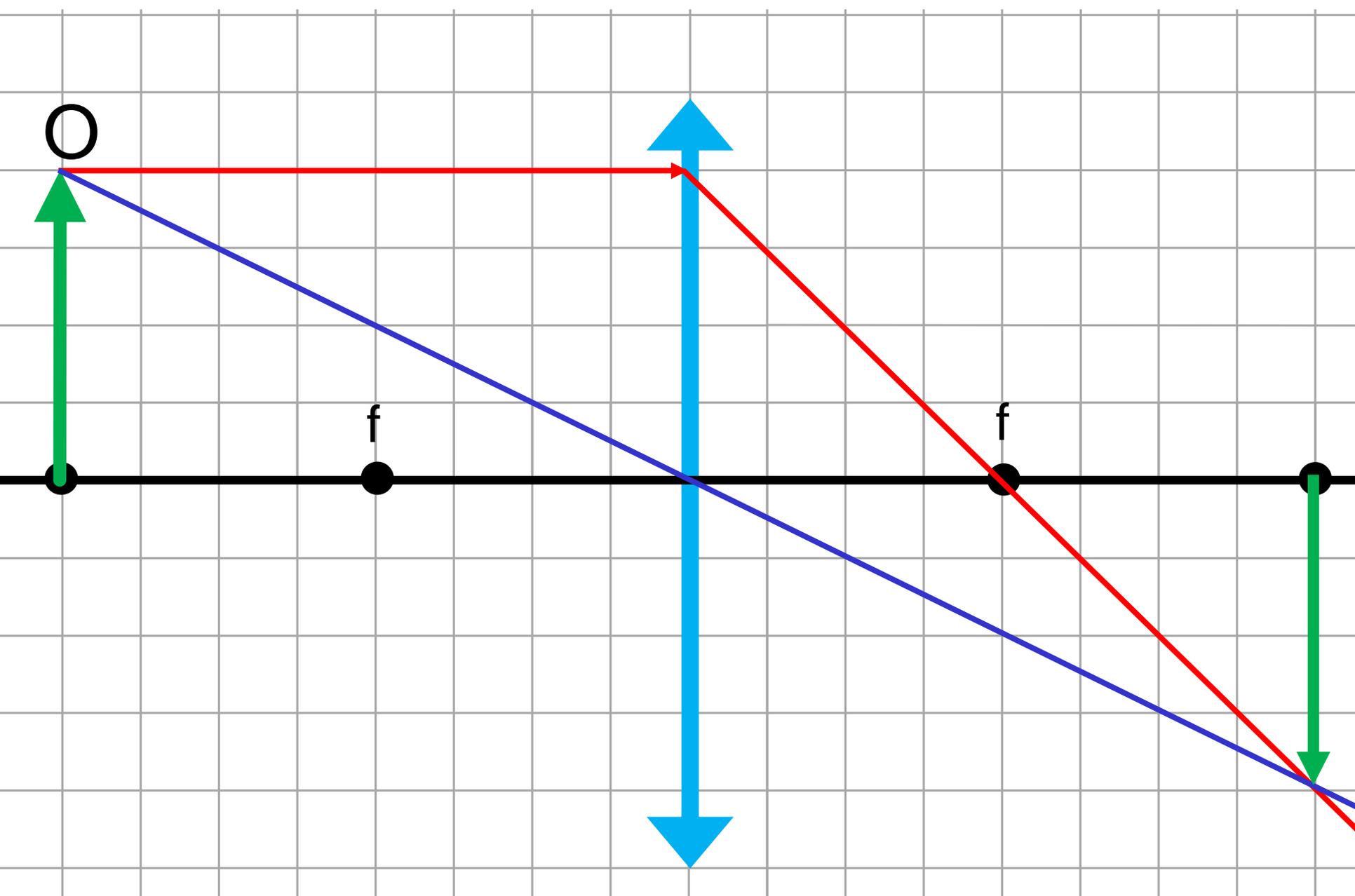


Figura 4: Objeto no anti-principal

CLASSIFICAÇÃO:

Imagem

REAL  
INVERTIDA

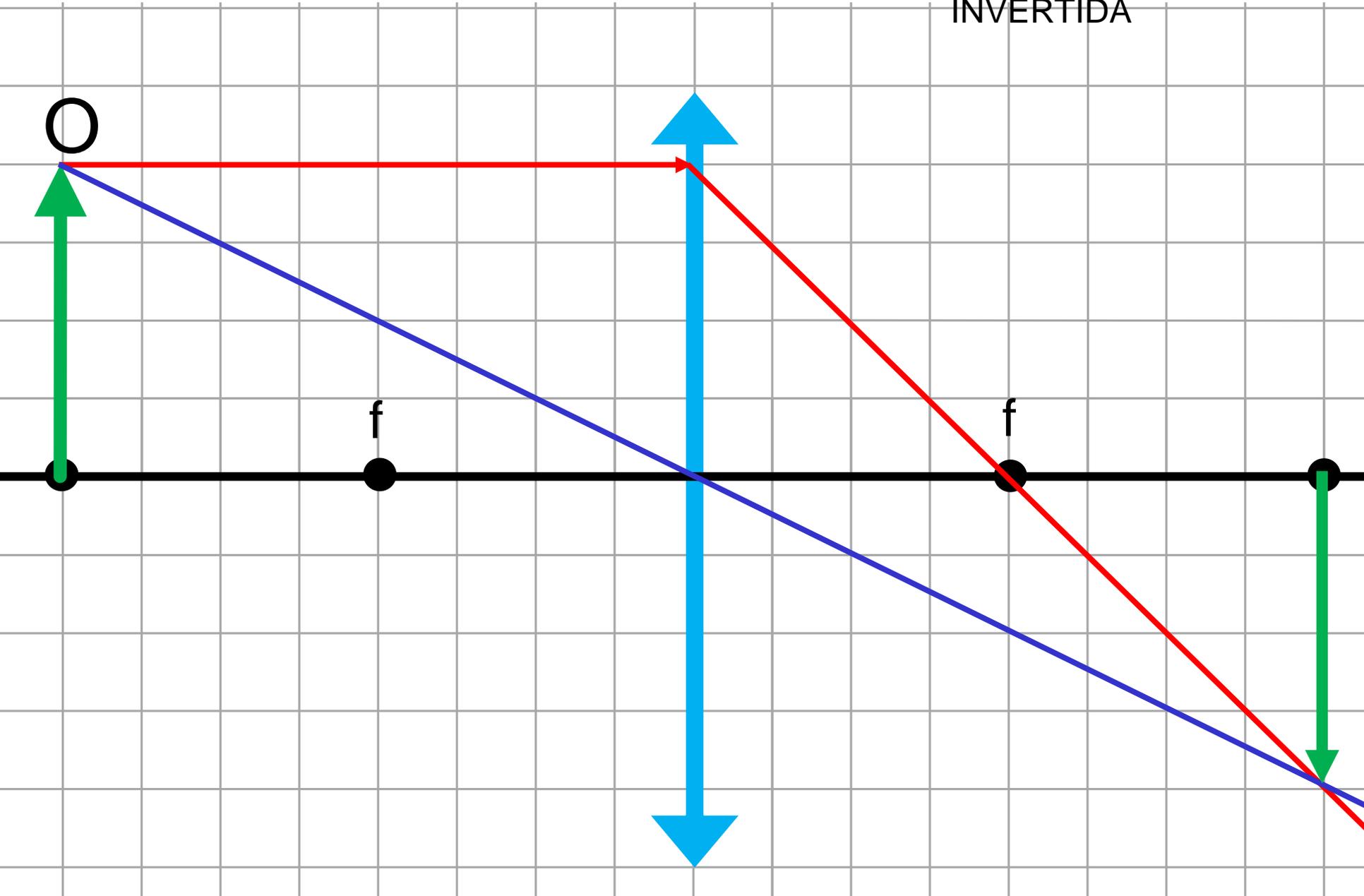


Figura 4: Objeto no anti-principal

CLASSIFICAÇÃO:

Imagem

REAL

INVERTIDA

IGUAL

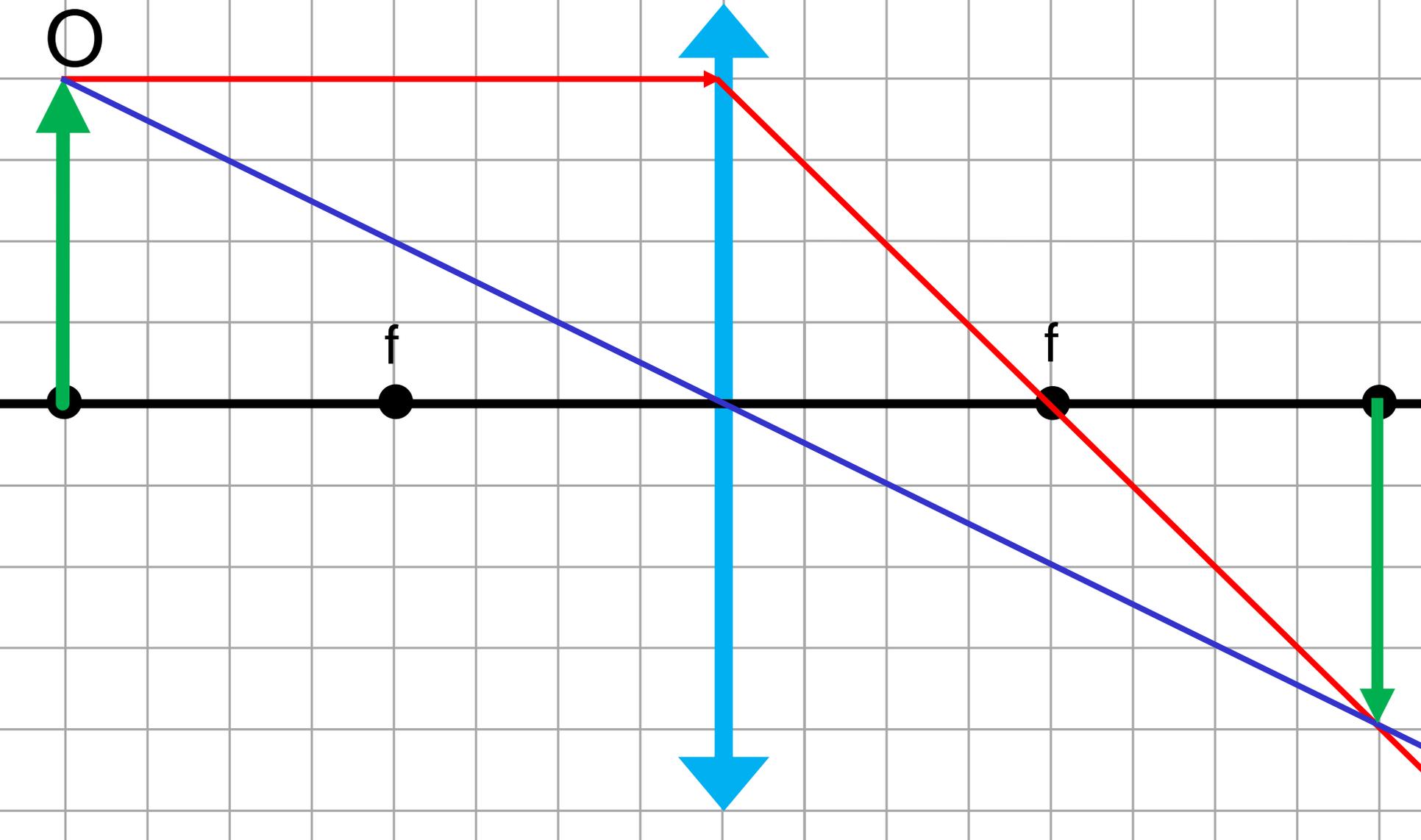
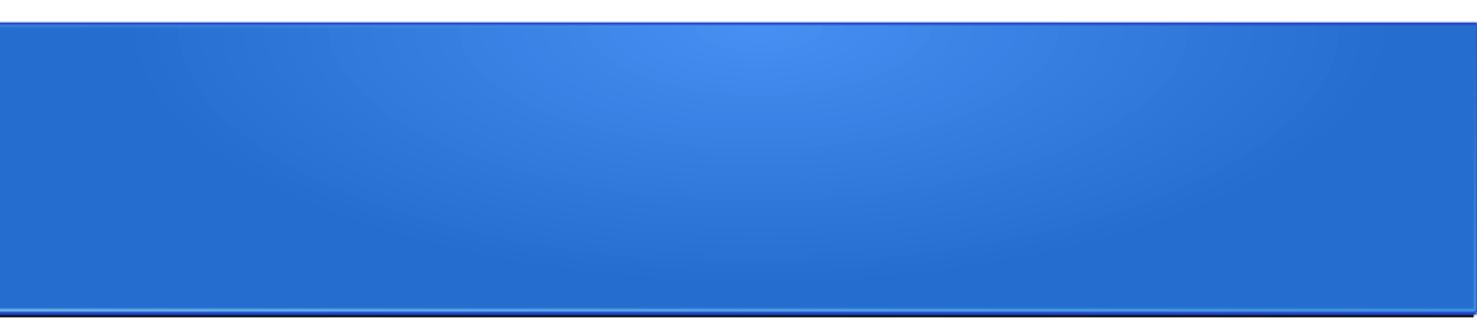


Figura 4: Objeto no anti-principal



# Quinto caso

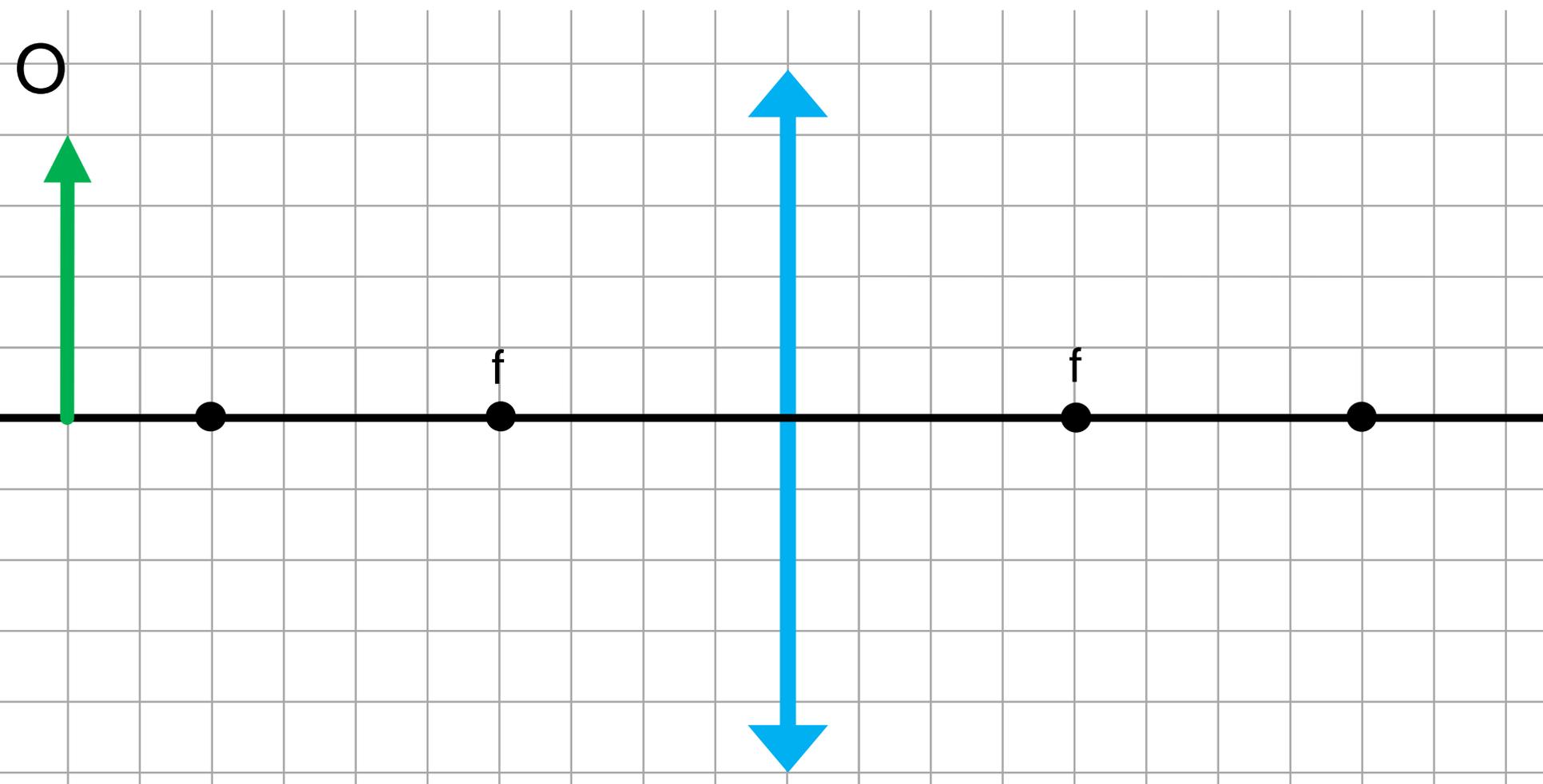


Figura 5: Objeto além do anti-principal

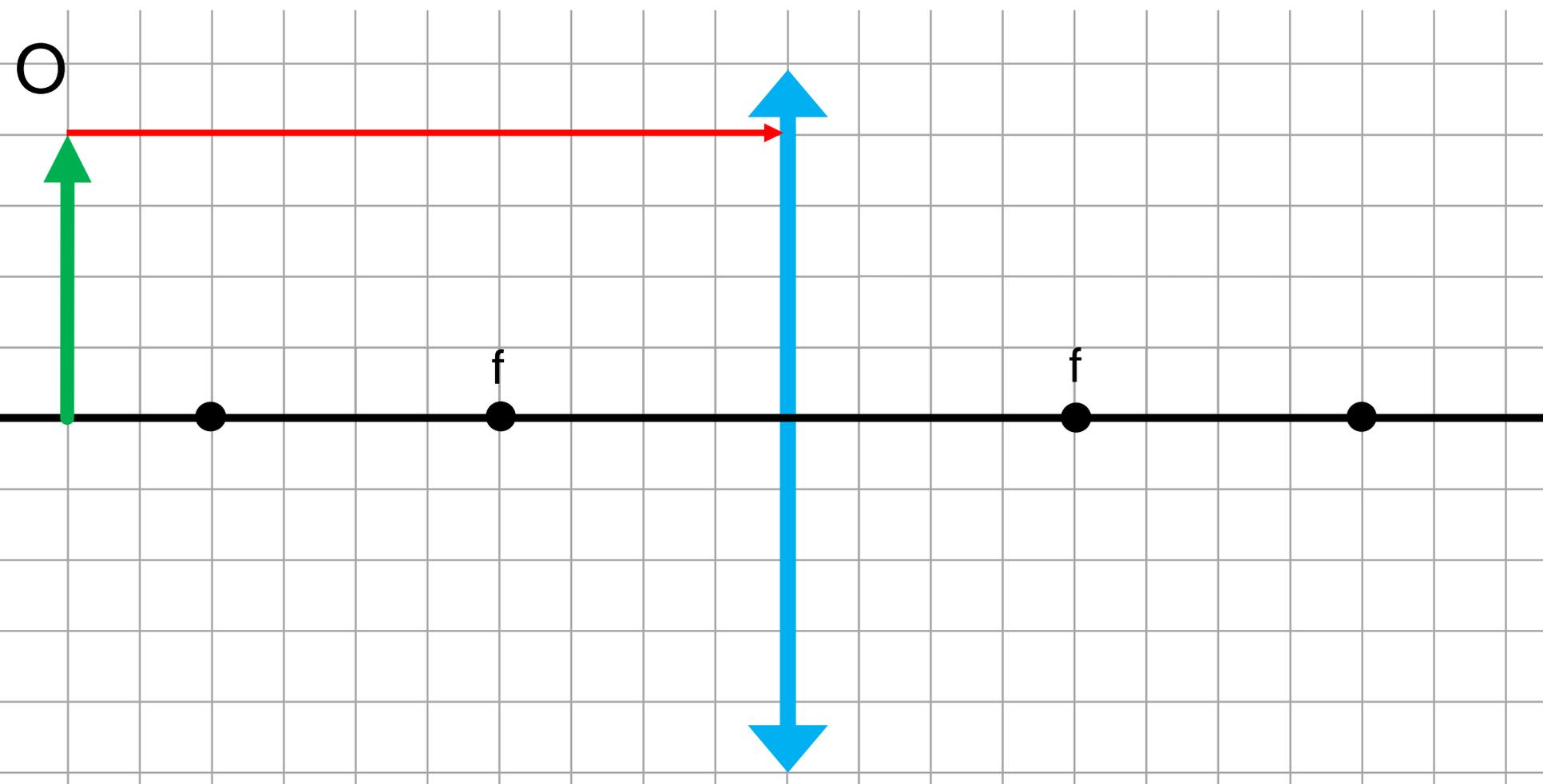


Figura 5: Objeto além do anti-principal

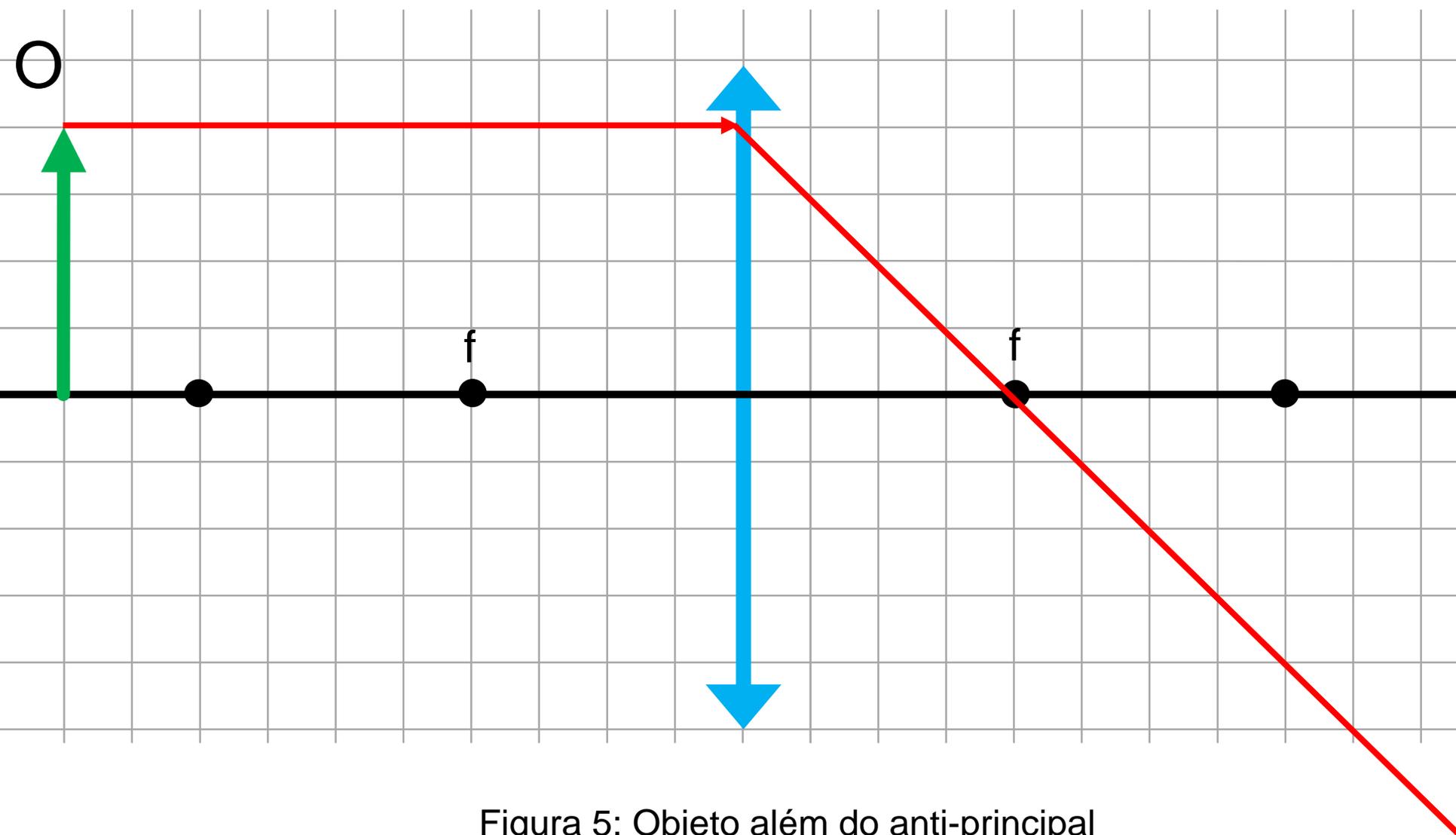


Figura 5: Objeto além do anti-principal

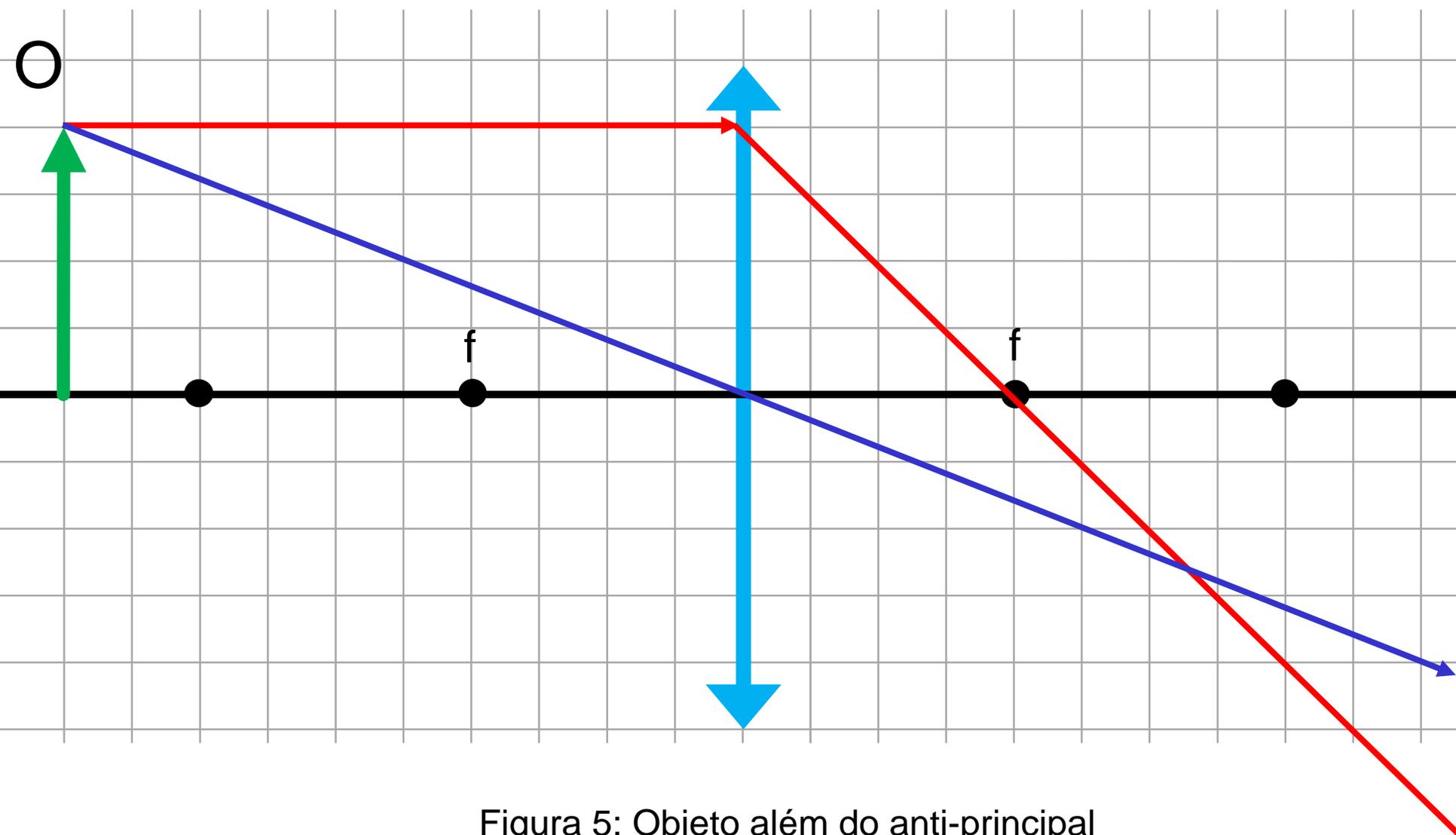


Figura 5: Objeto além do anti-principal

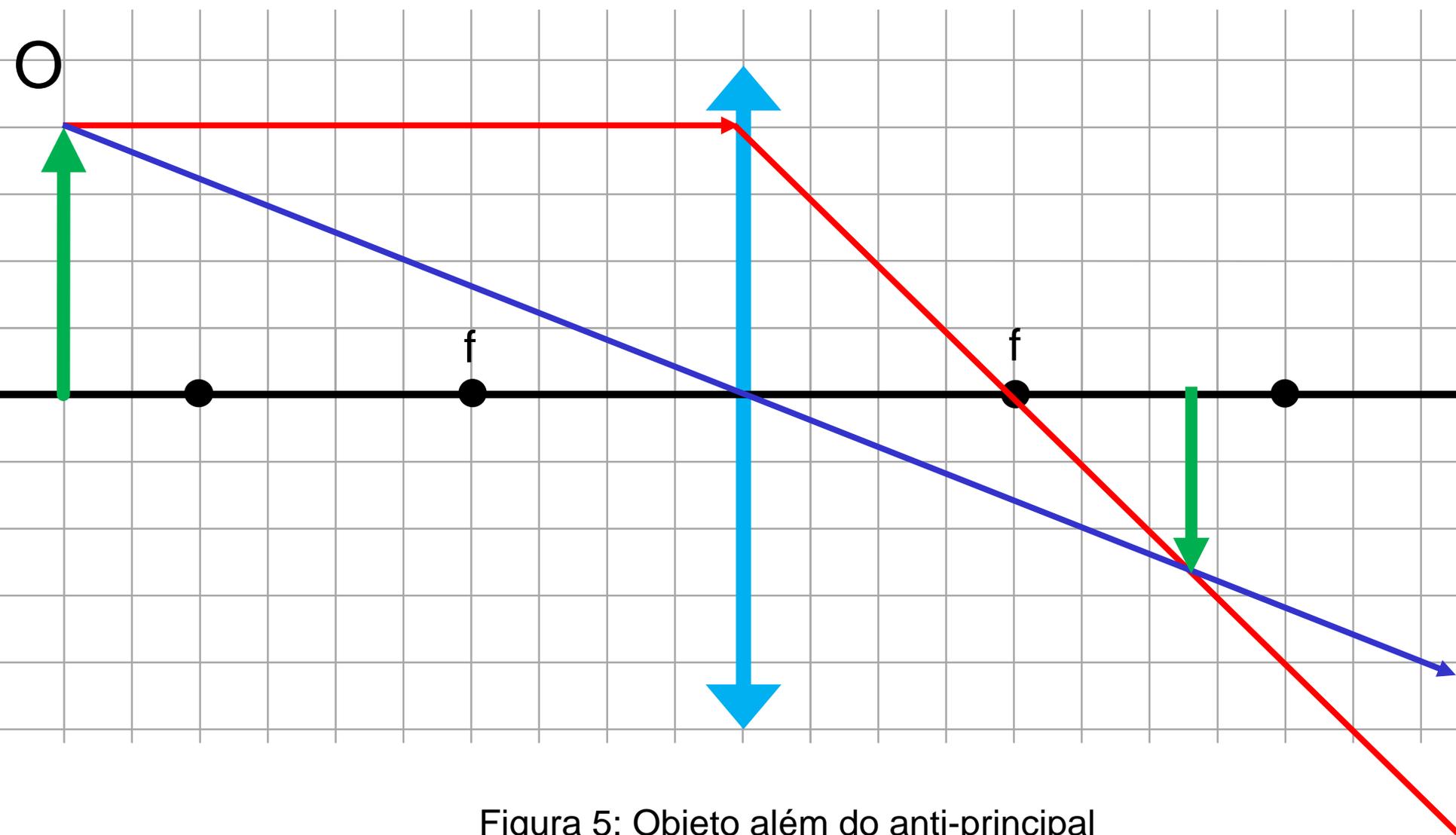


Figura 5: Objeto além do anti-principal

CLASSIFICAÇÃO: Imagem REAL

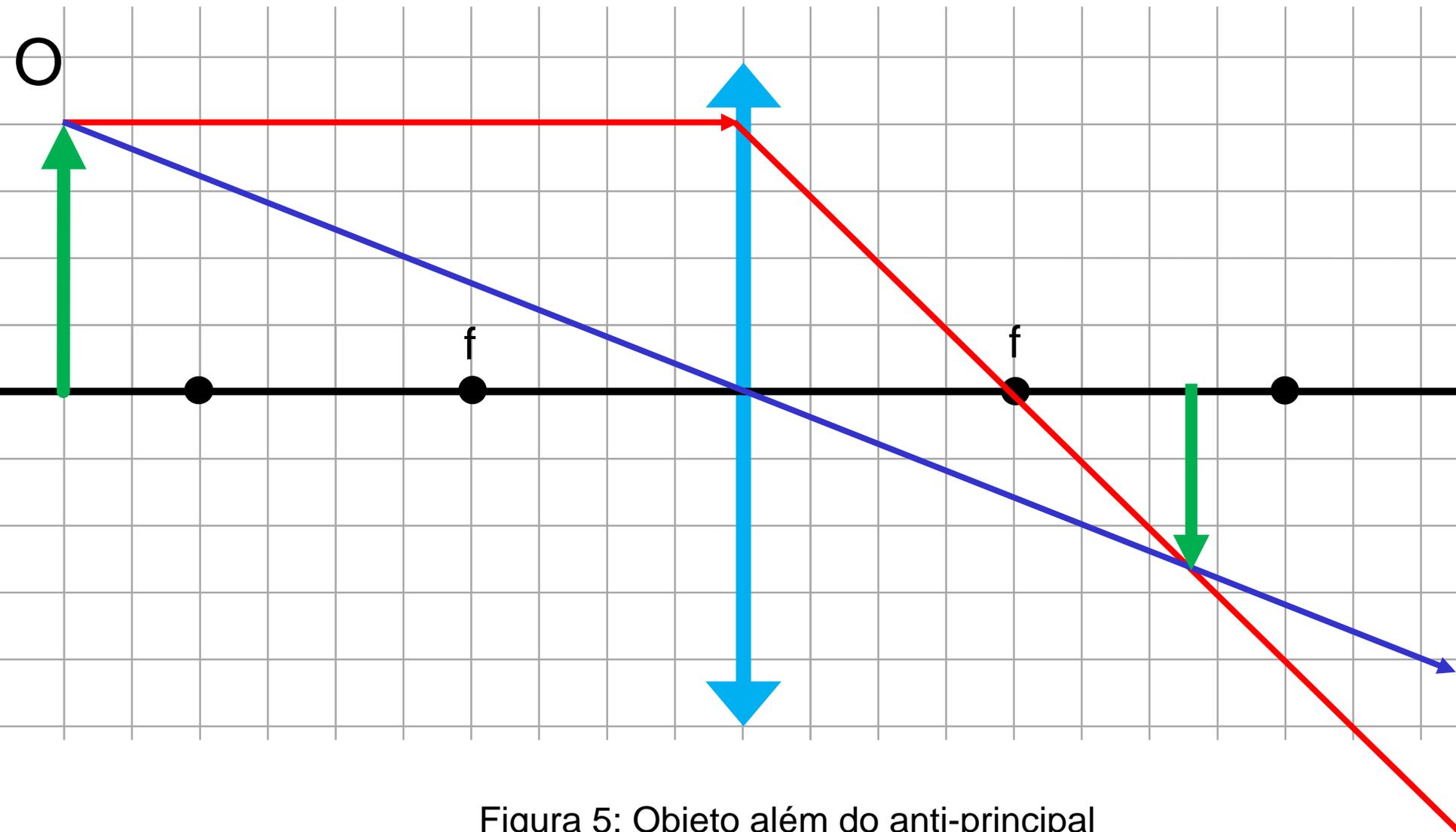


Figura 5: Objeto além do anti-principal

CLASSIFICAÇÃO: Imagem REAL  
INVERTIDA

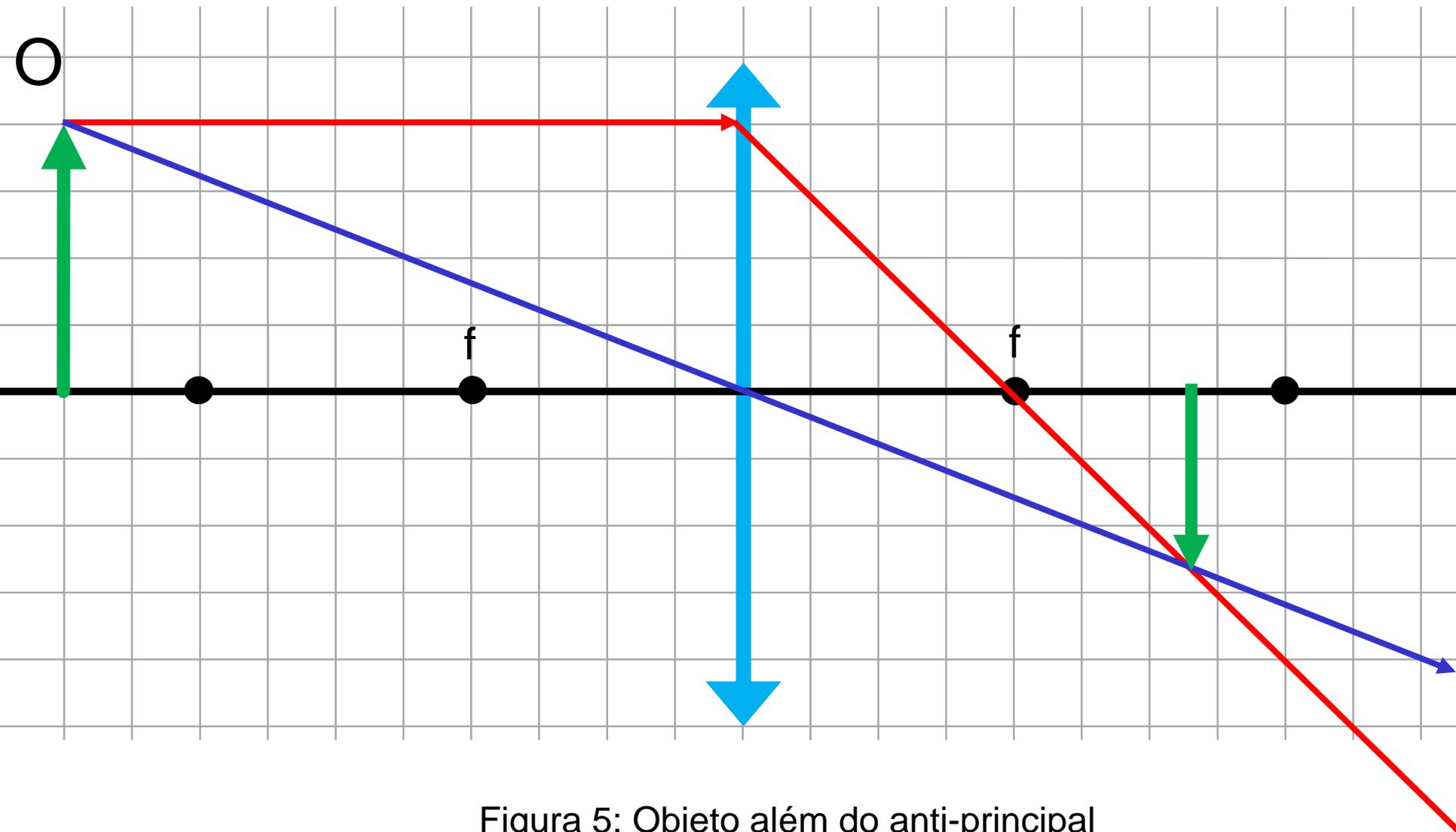


Figura 5: Objeto além do anti-principal

CLASSIFICAÇÃO:

Imagem

REAL  
INVERTIDA  
MENOR

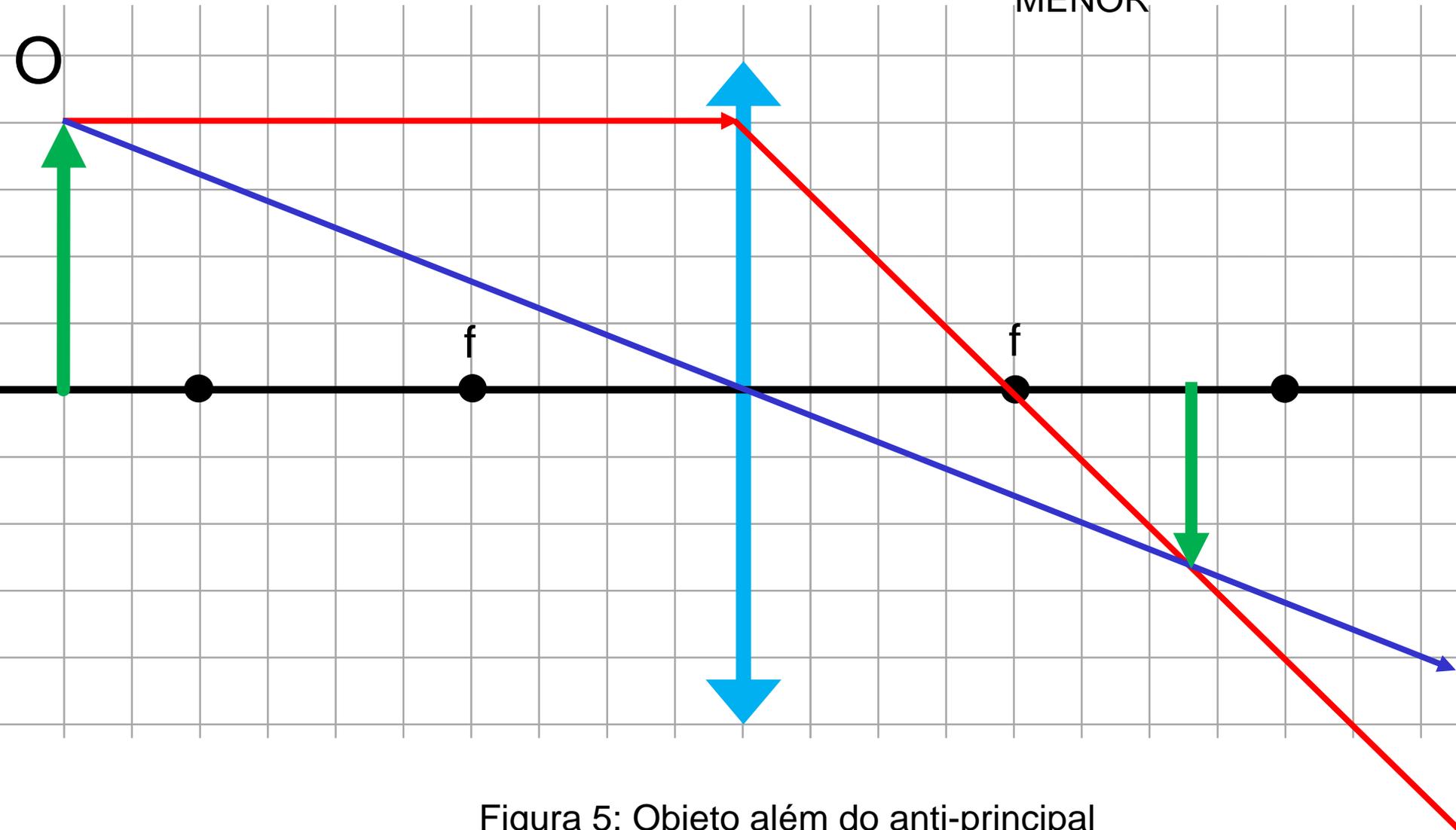
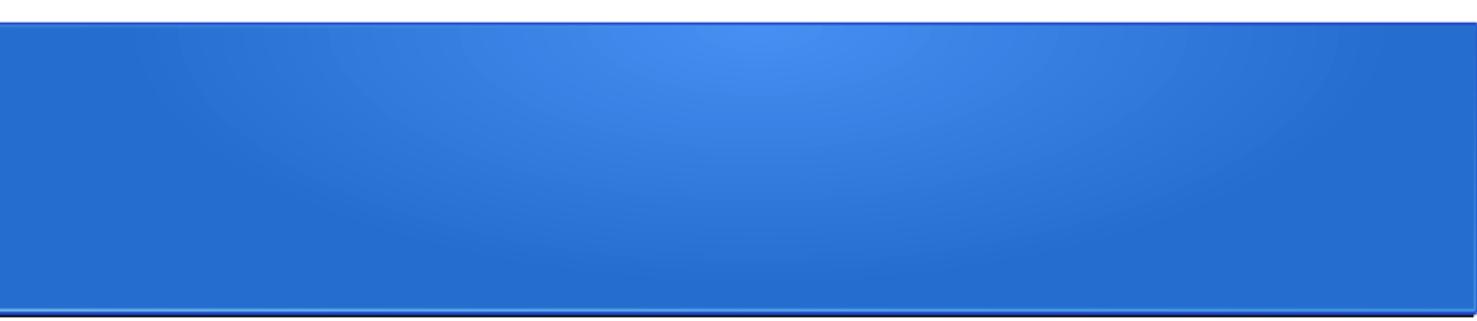


Figura 5: Objeto além do anti-principal



# Sexto Caso

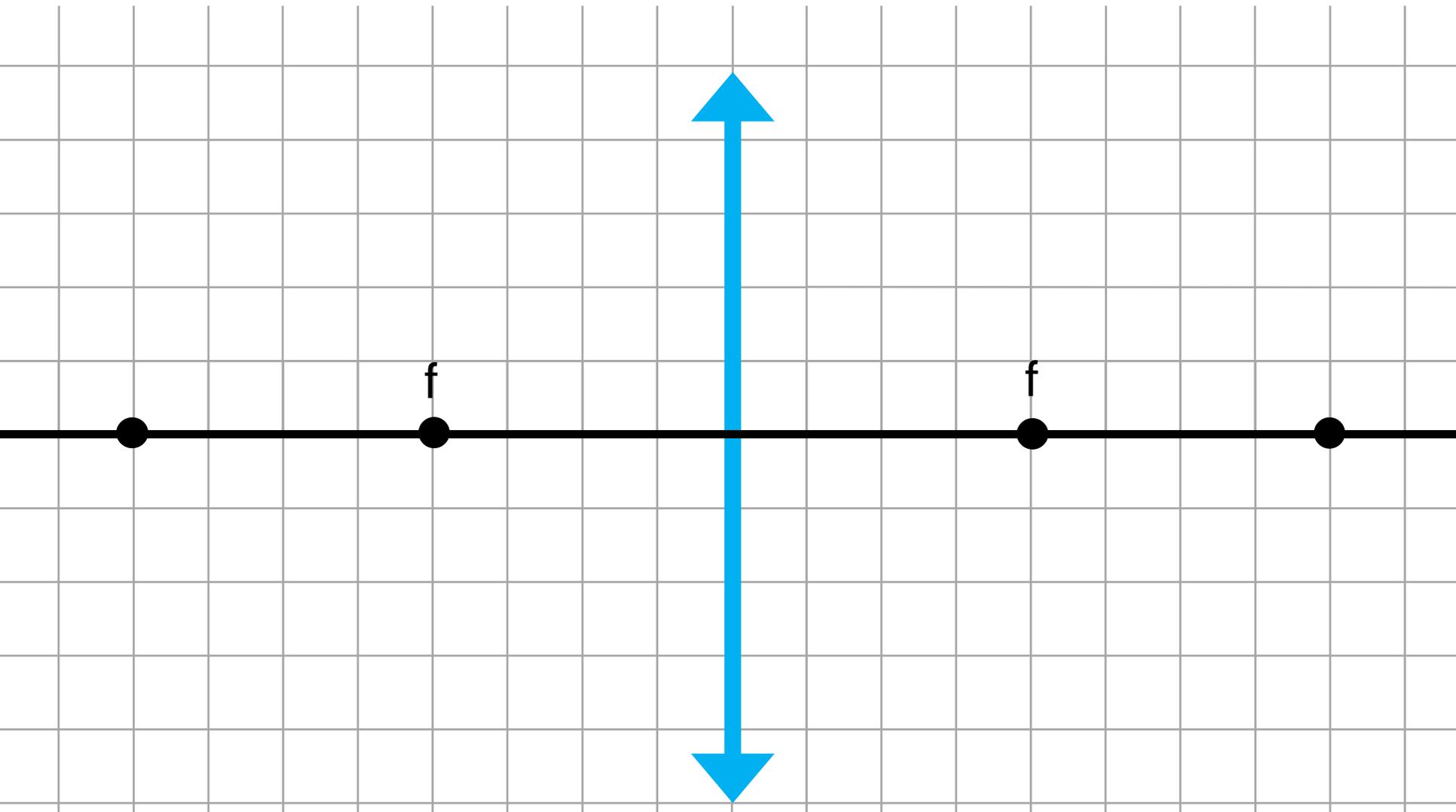


Figura 6: Objeto no “infinito”

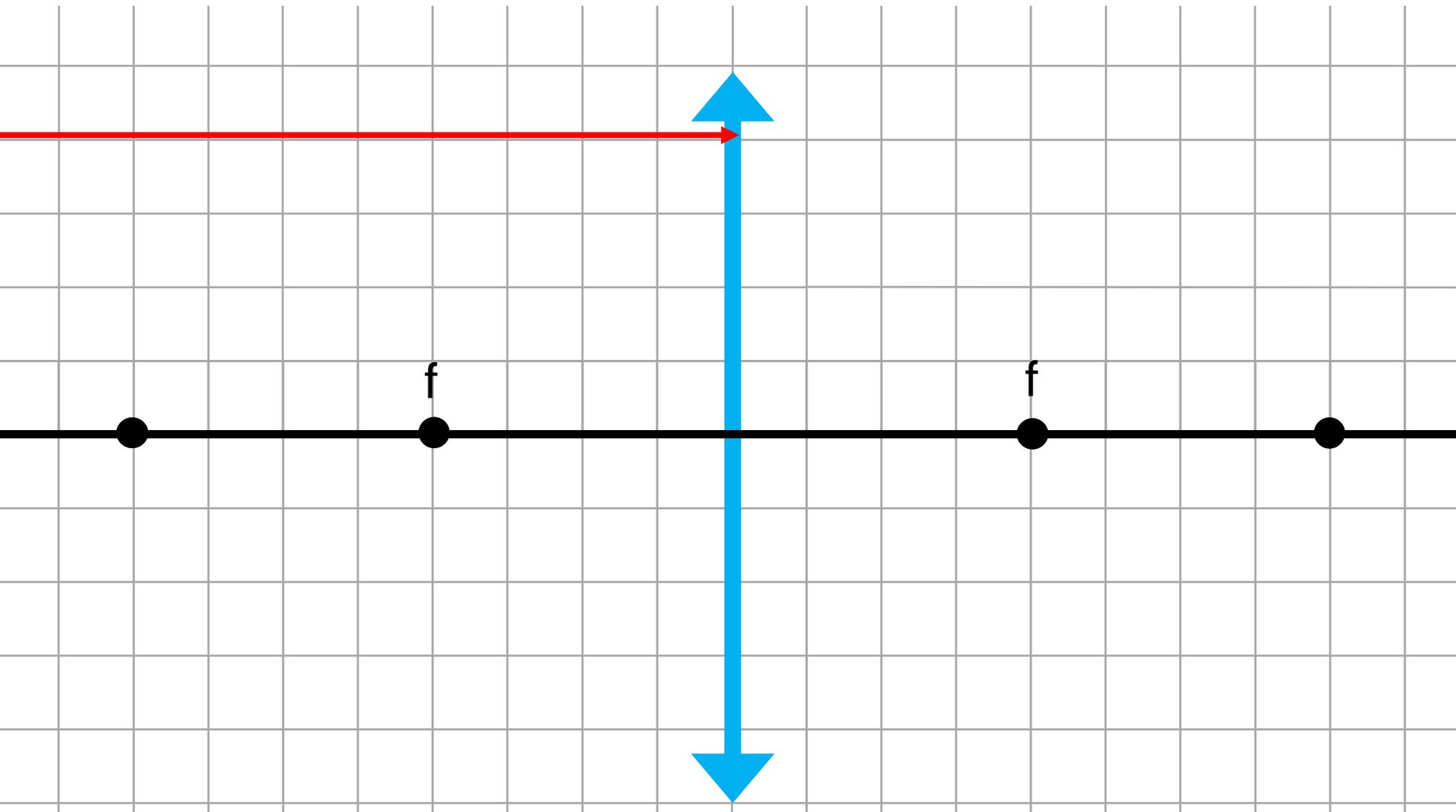


Figura 6: Objeto no “infinito”

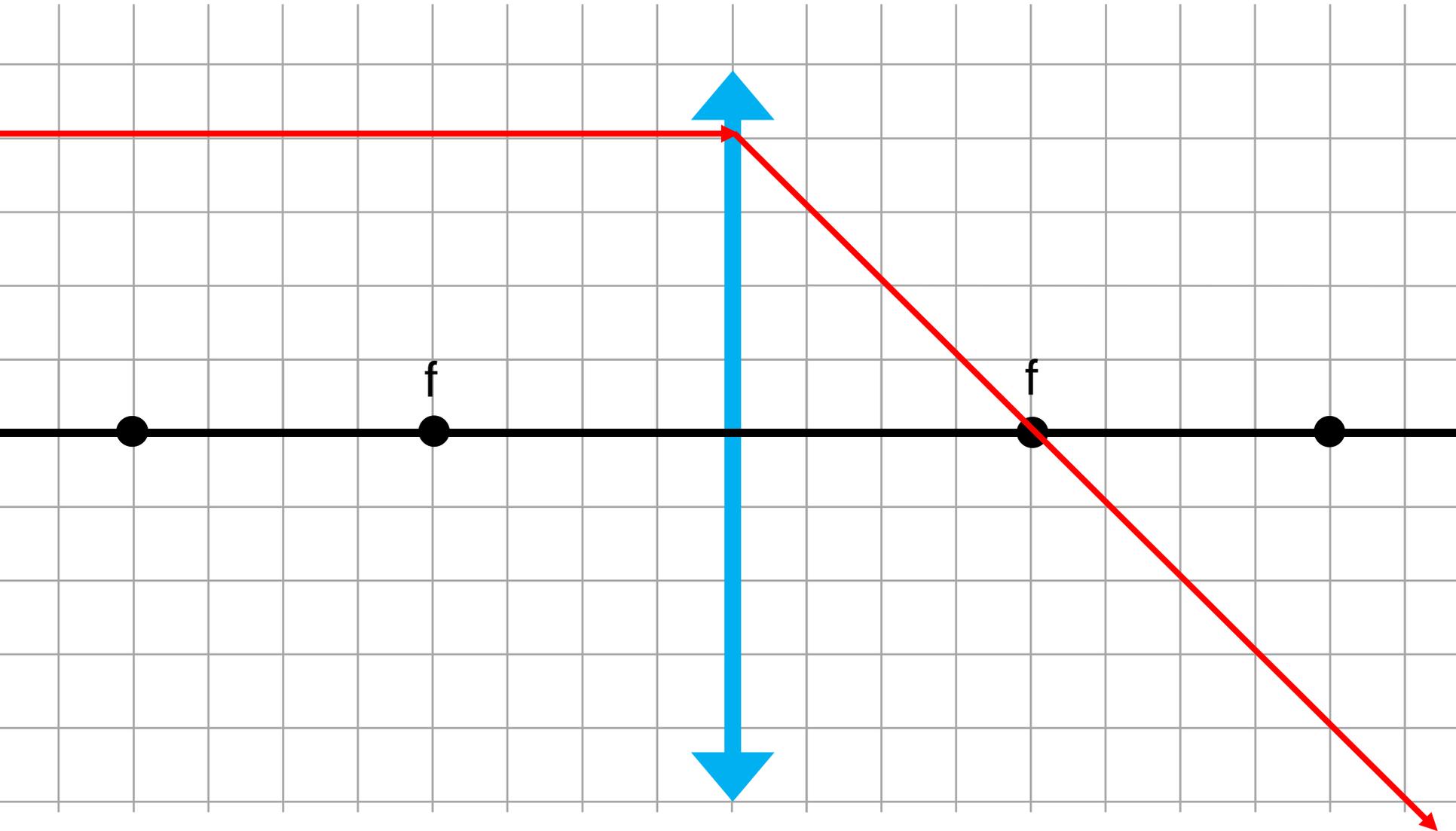


Figura 6: Objeto no “infinito”

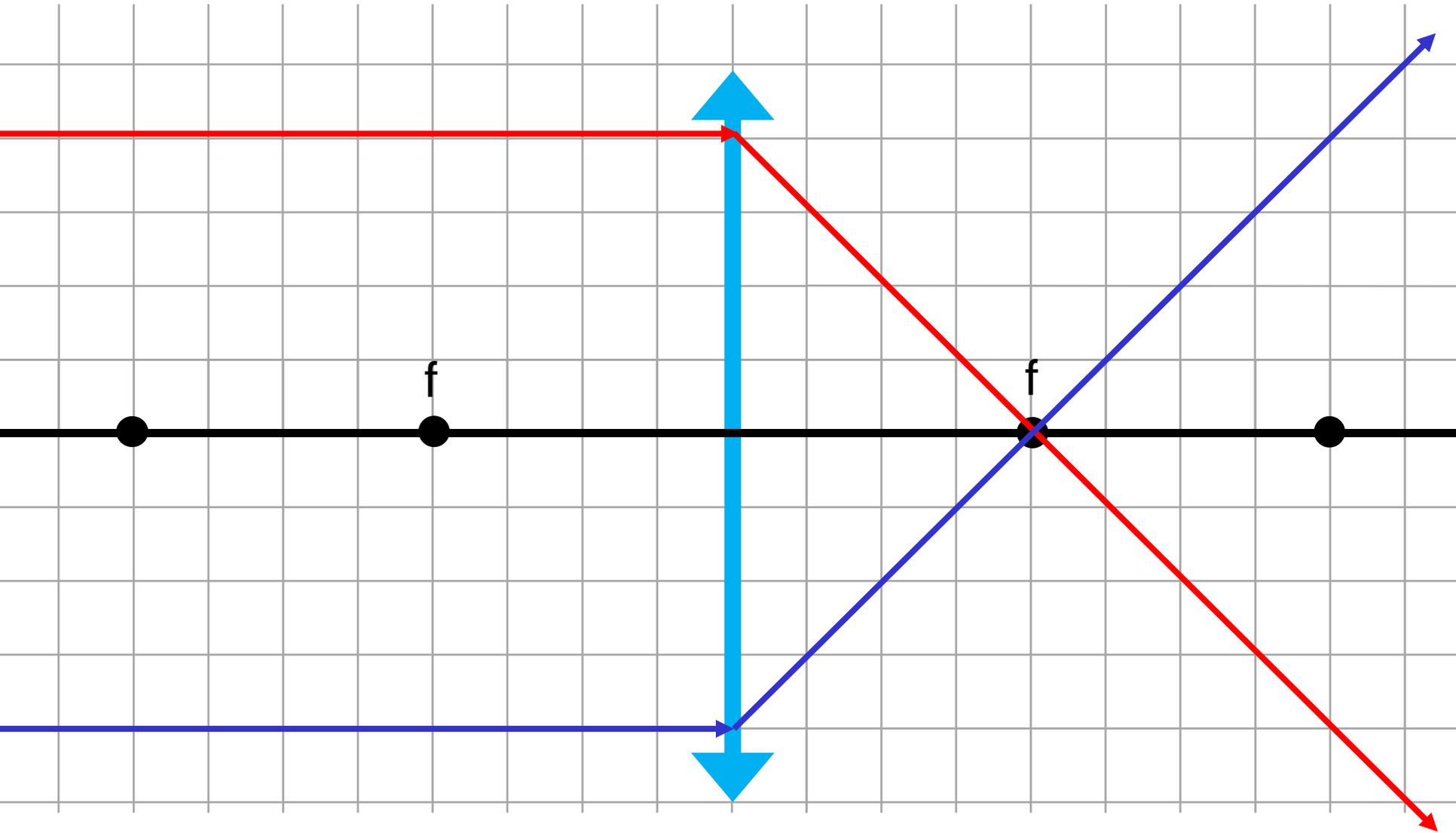


Figura 6: Objeto no “infinito”

CLASSIFICAÇÃO: Imagem

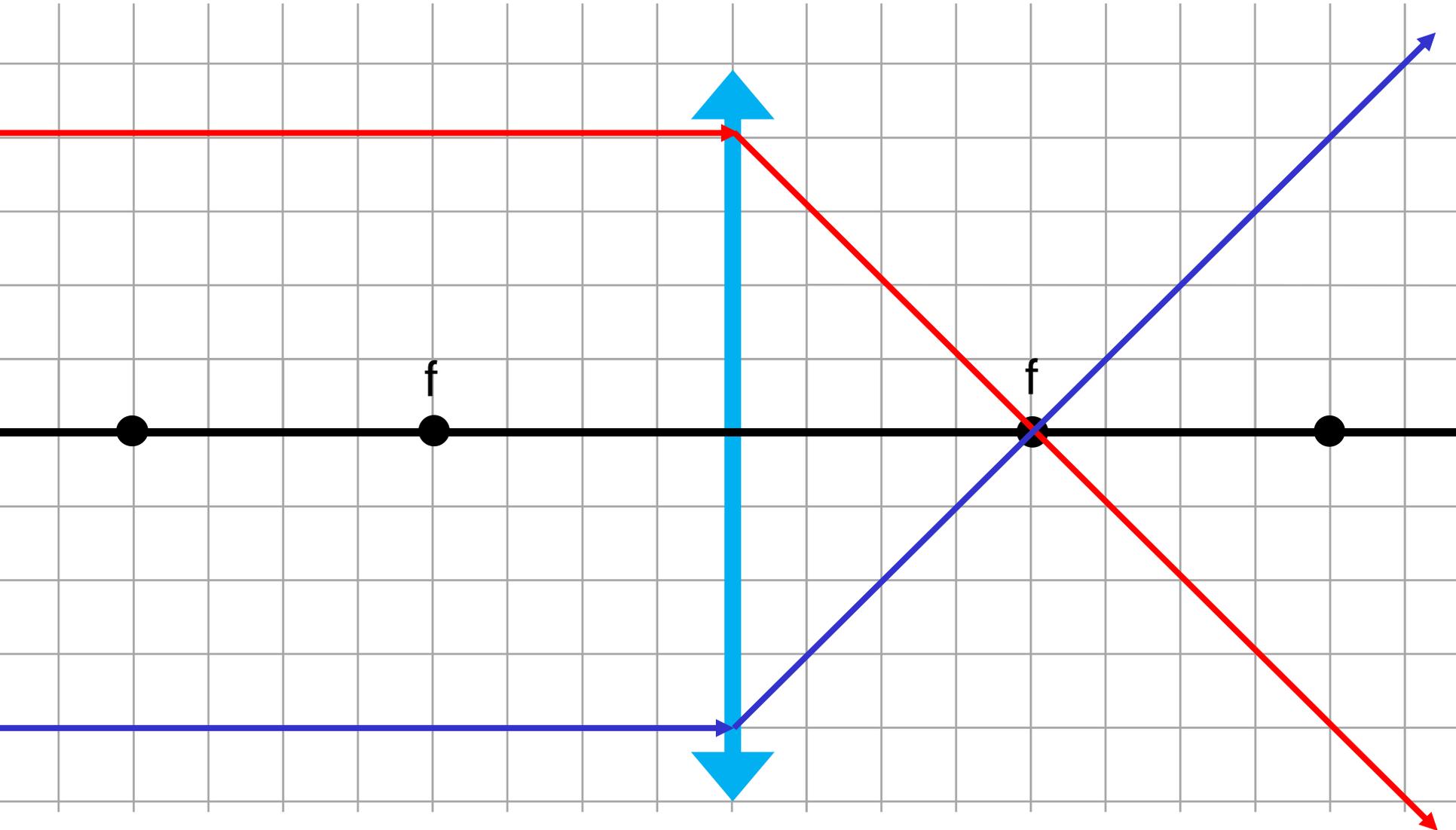


Figura 6: Objeto no “infinito”

CLASSIFICAÇÃO:

Imagem PONTUAL, REAL  
E LOCALIZADA NO FOCO  
IMAGEM

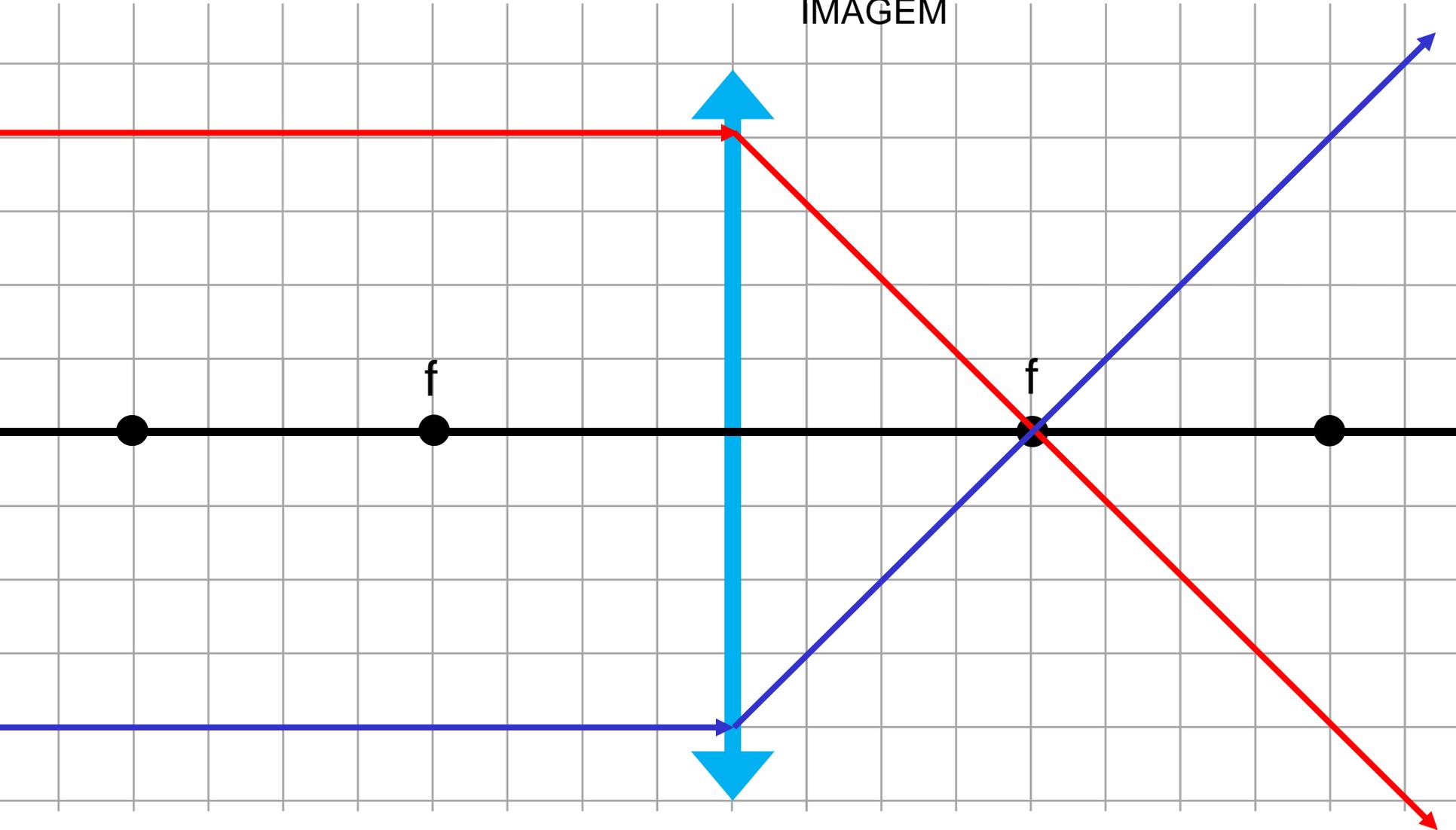
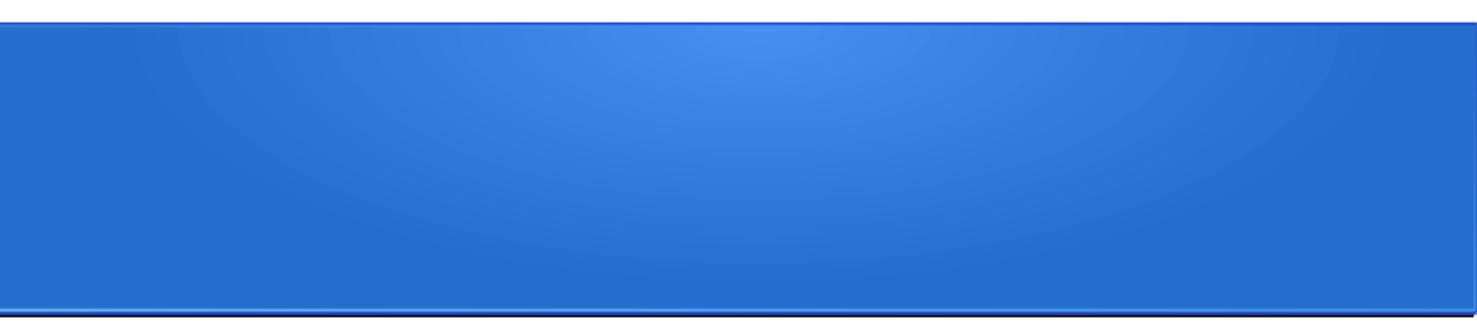
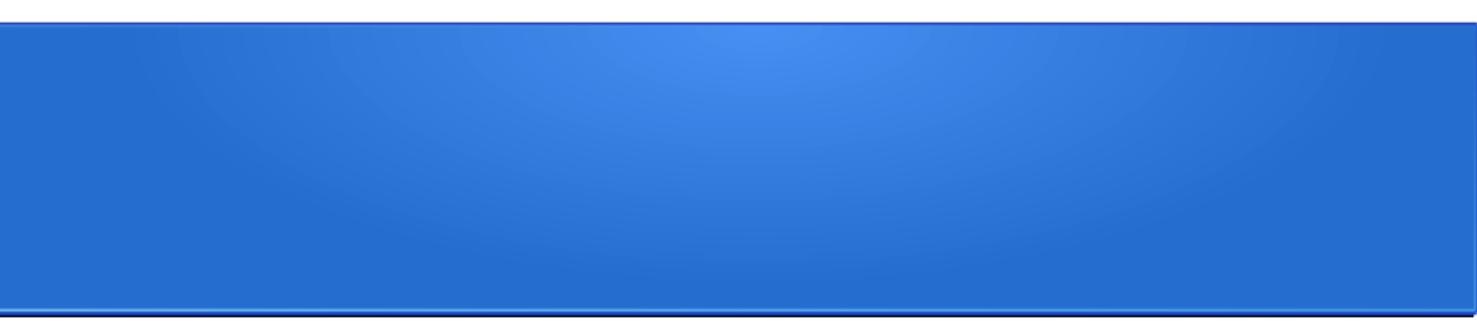


Figura 6: Objeto no “infinito”



# LENTES DIVERGENTES



Primeiro caso

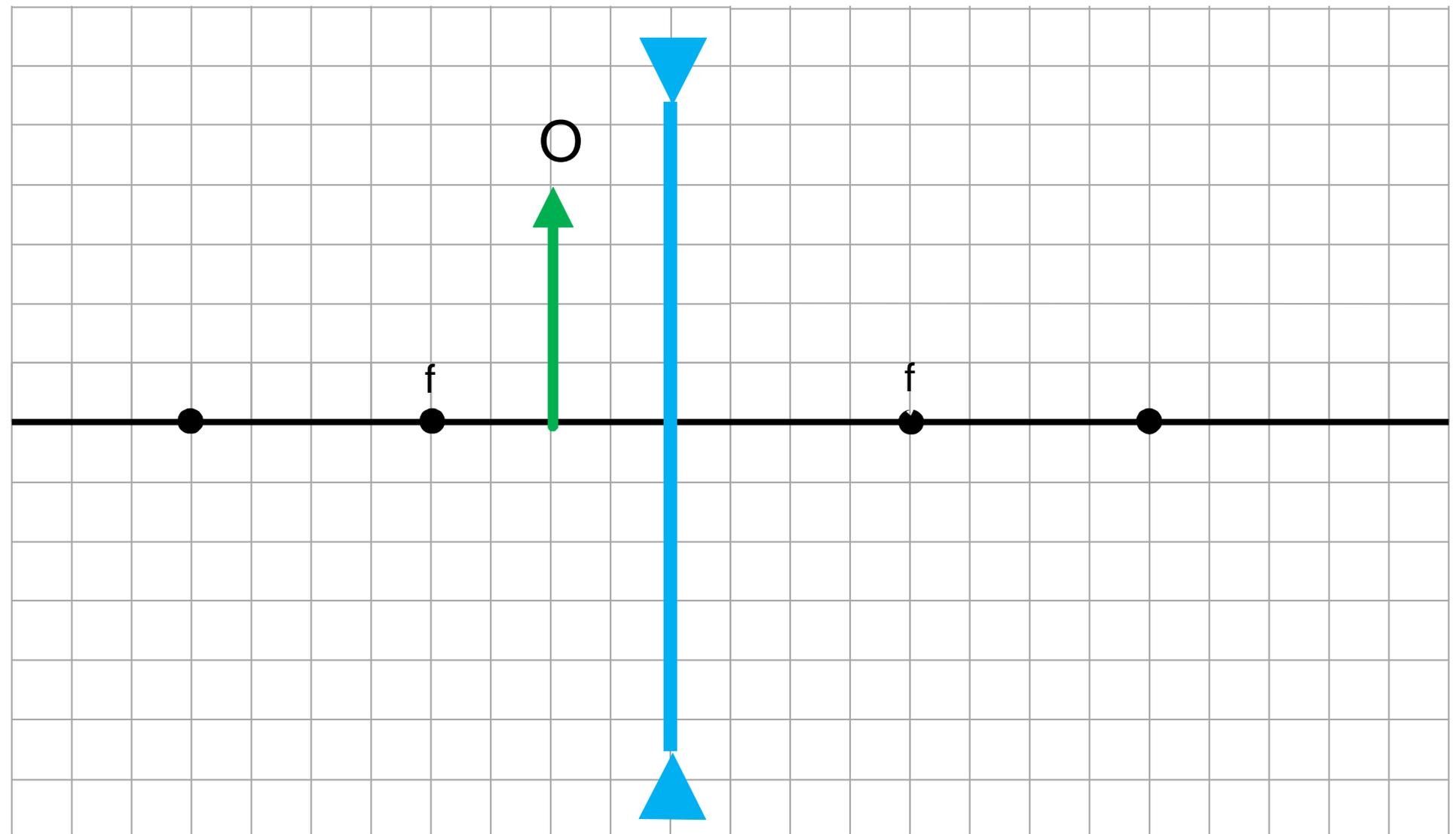


Figura 7: Objeto entre o vértice e o foco

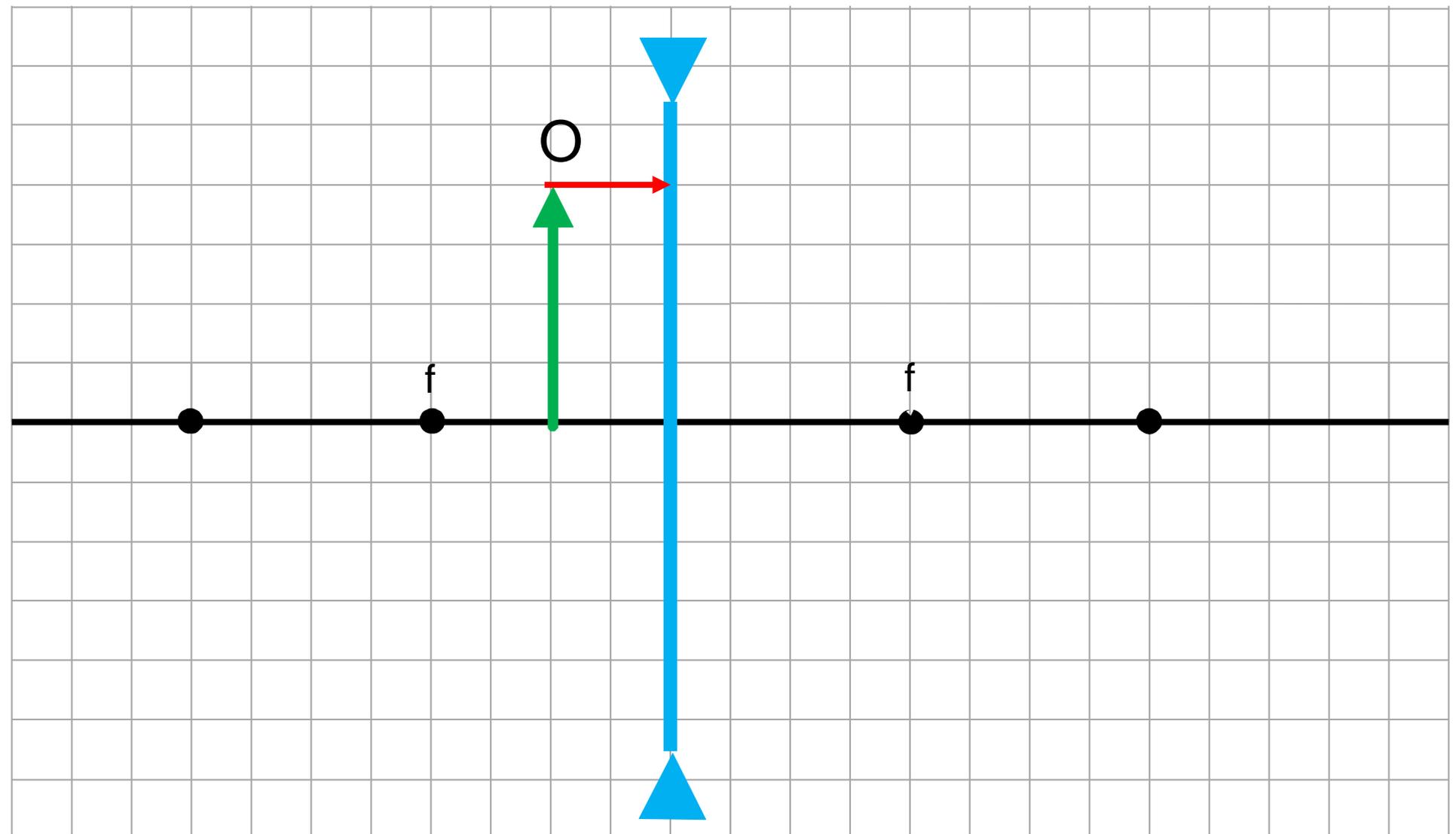


Figura 7: Objeto entre o vértice e o foco

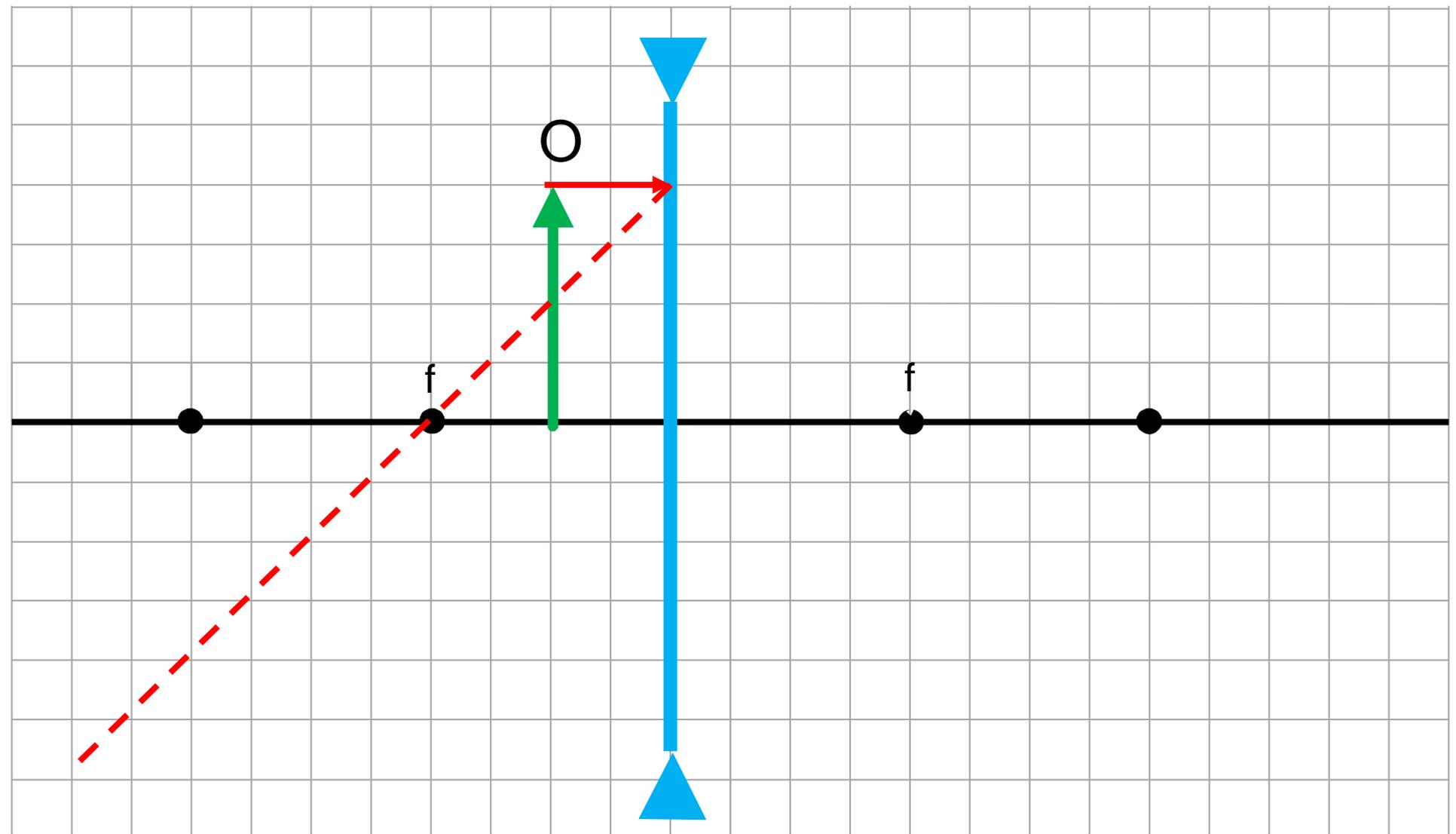


Figura 7: Objeto entre o vértice e o foco

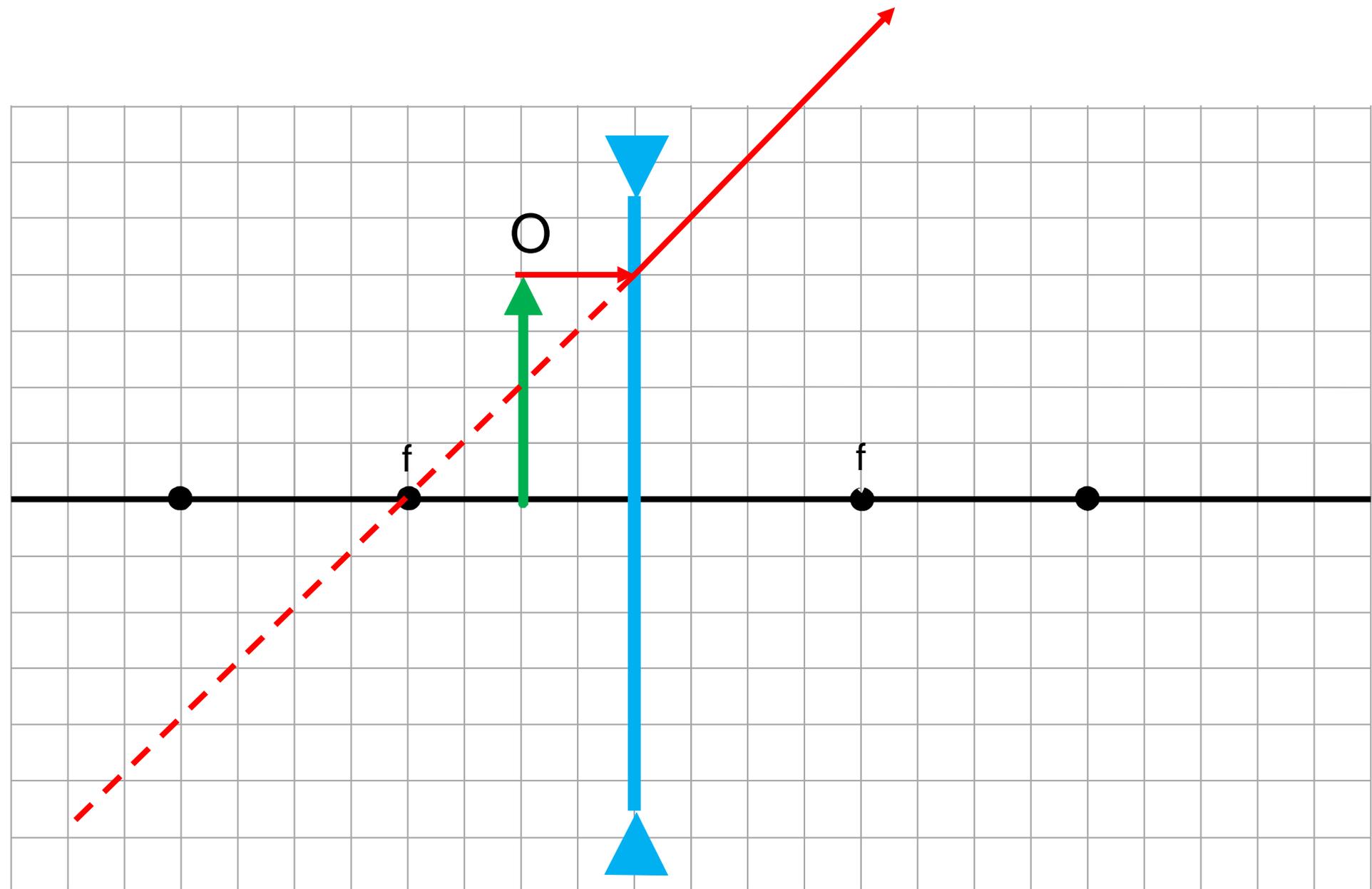


Figura 7: Objeto entre o vértice e o foco

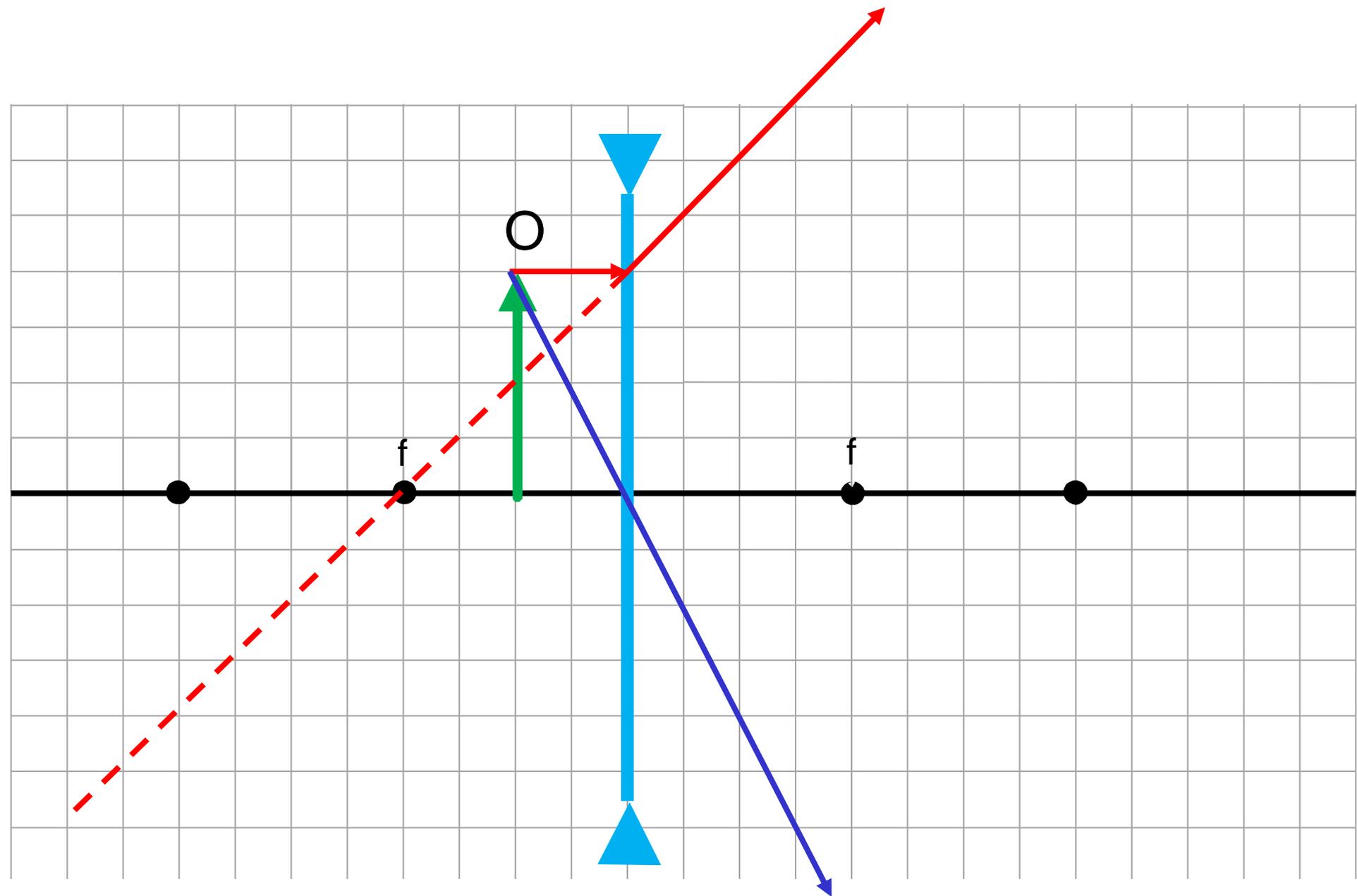


Figura 7: Objeto entre o vértice e o foco

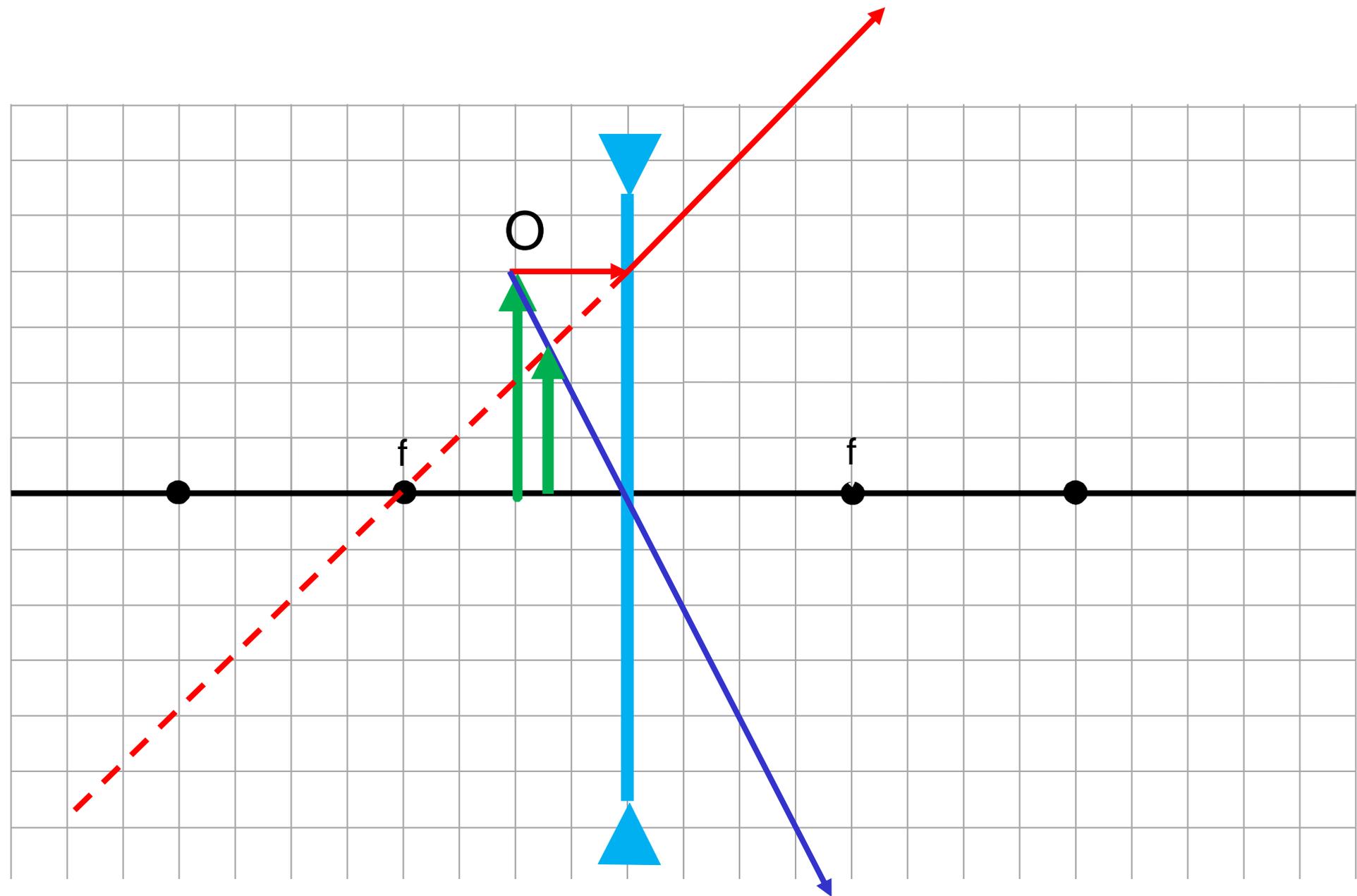


Figura 7: Objeto entre o vértice e o foco

CLASSIFICAÇÃO:

Imagem

VIRTUAL  
DIREITA  
MENOR

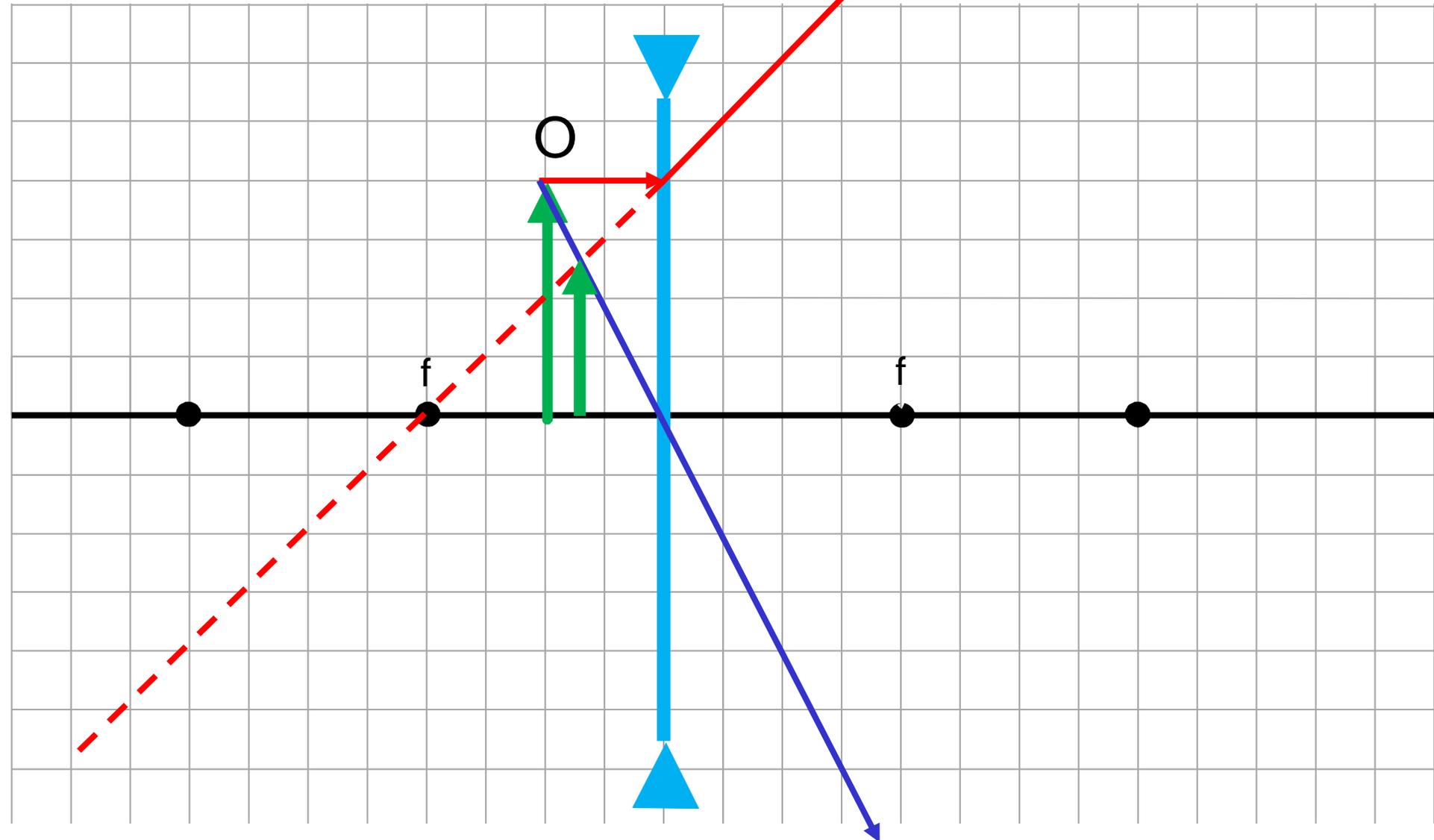
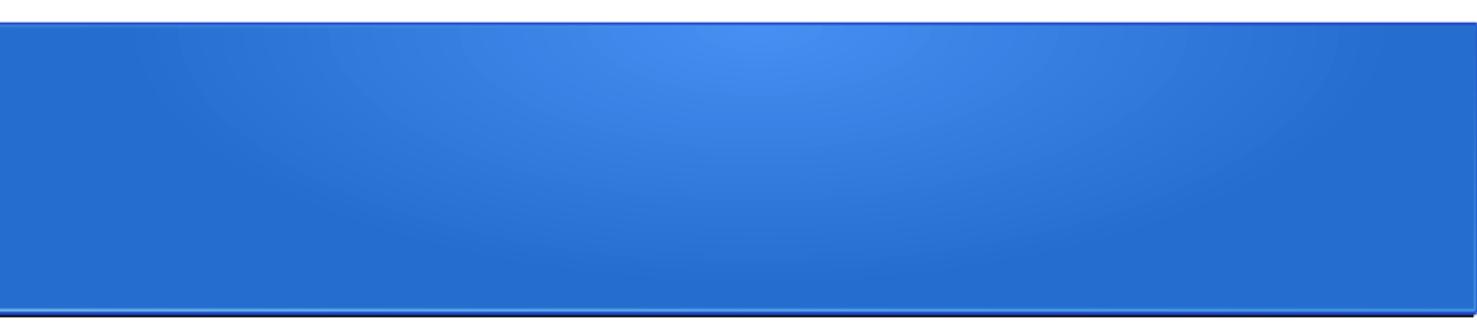


Figura 7: Objeto entre o vértice e o foco



# Segundo caso

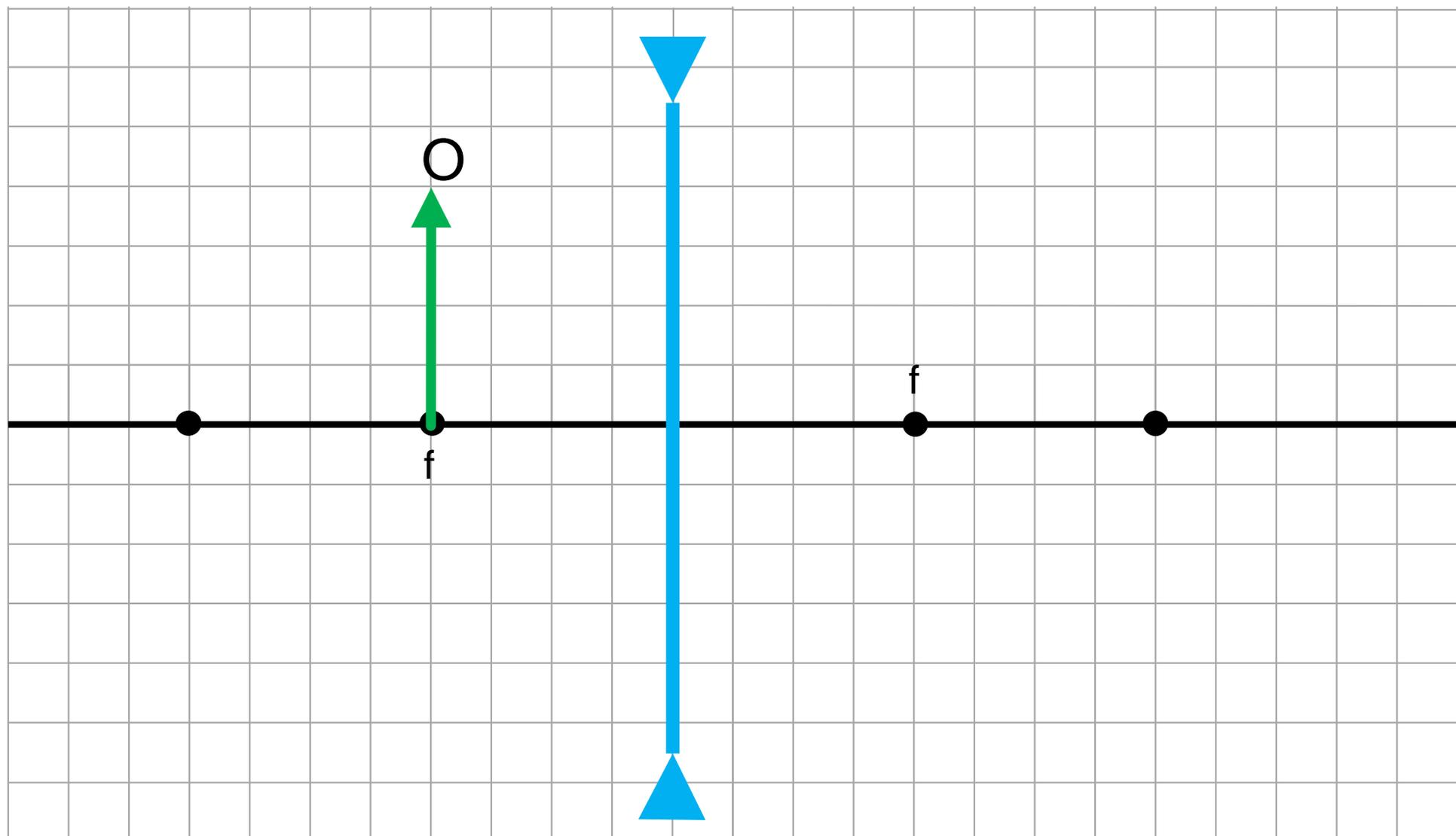


Figura 8: Objeto no foco

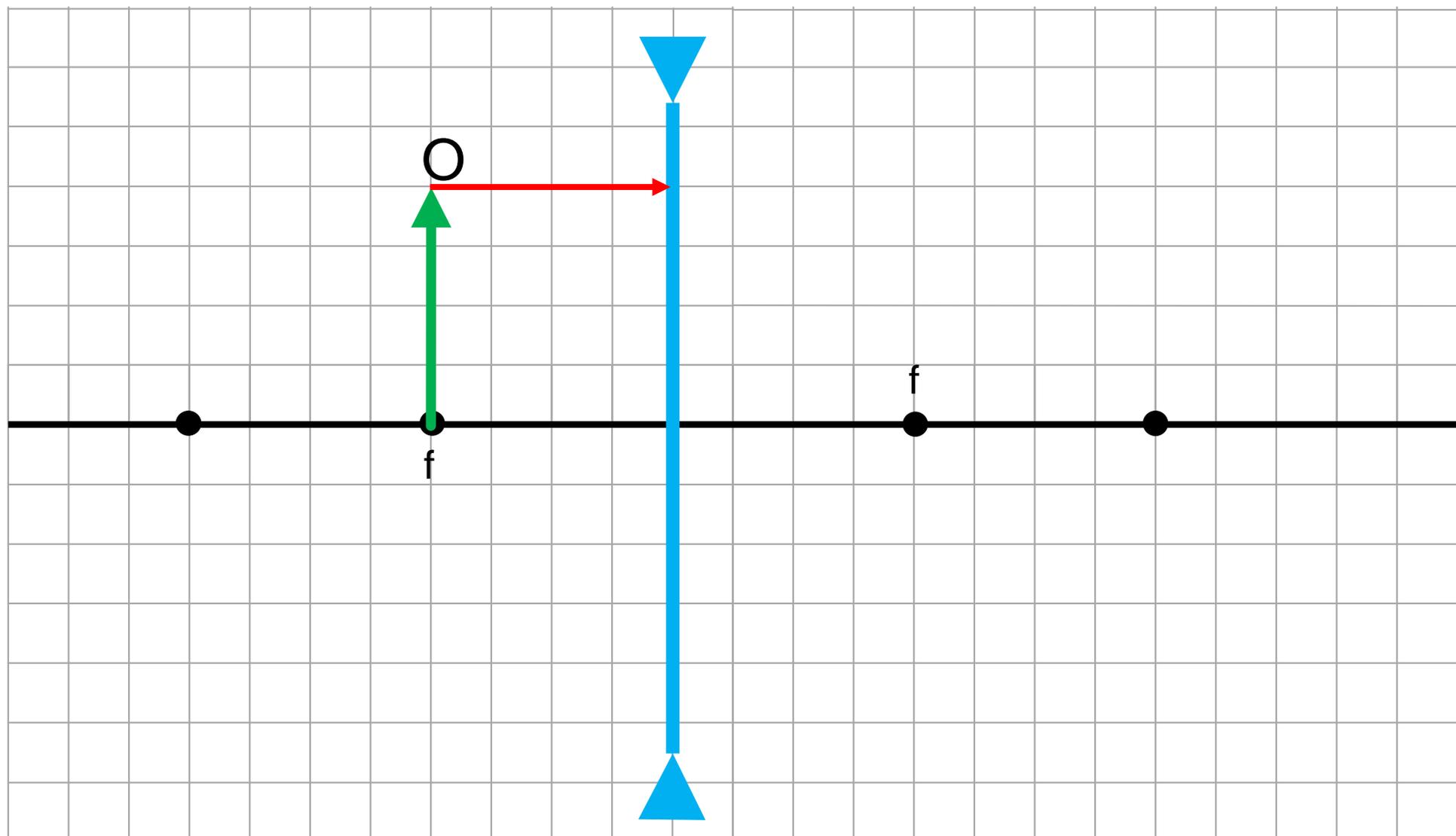


Figura 8: Objeto no foco

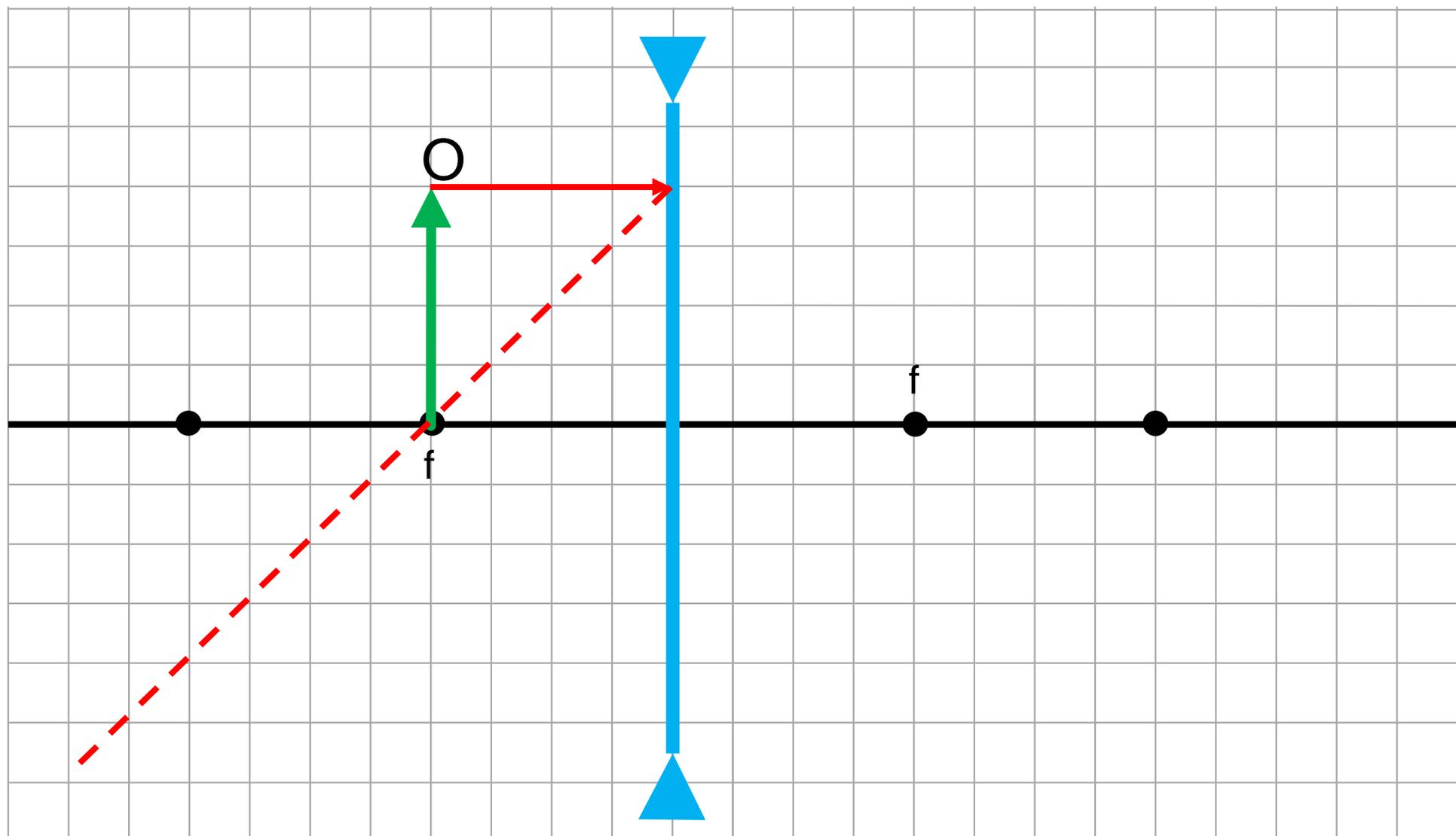


Figura 8: Objeto no foco

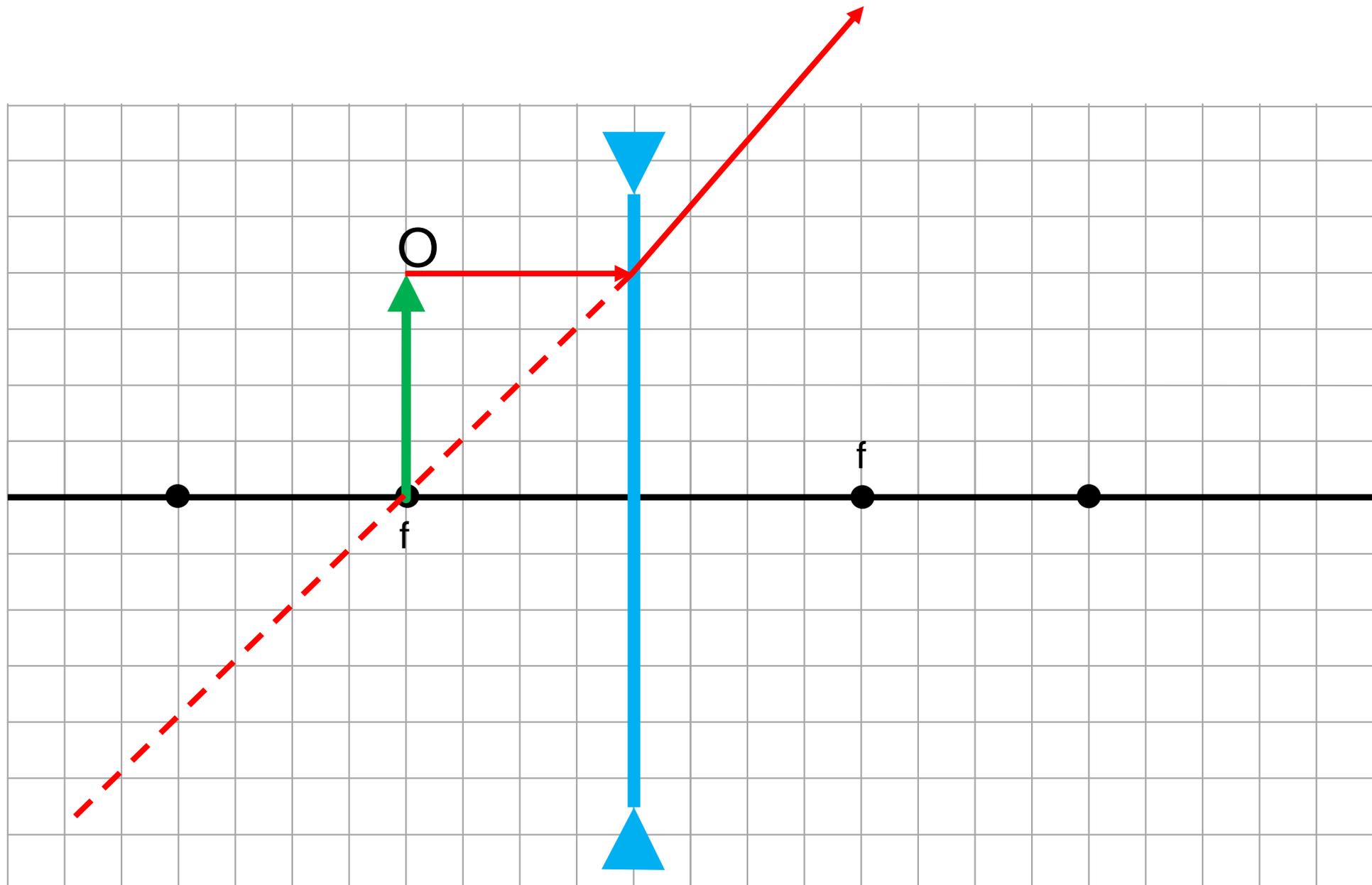


Figura 8: Objeto no foco

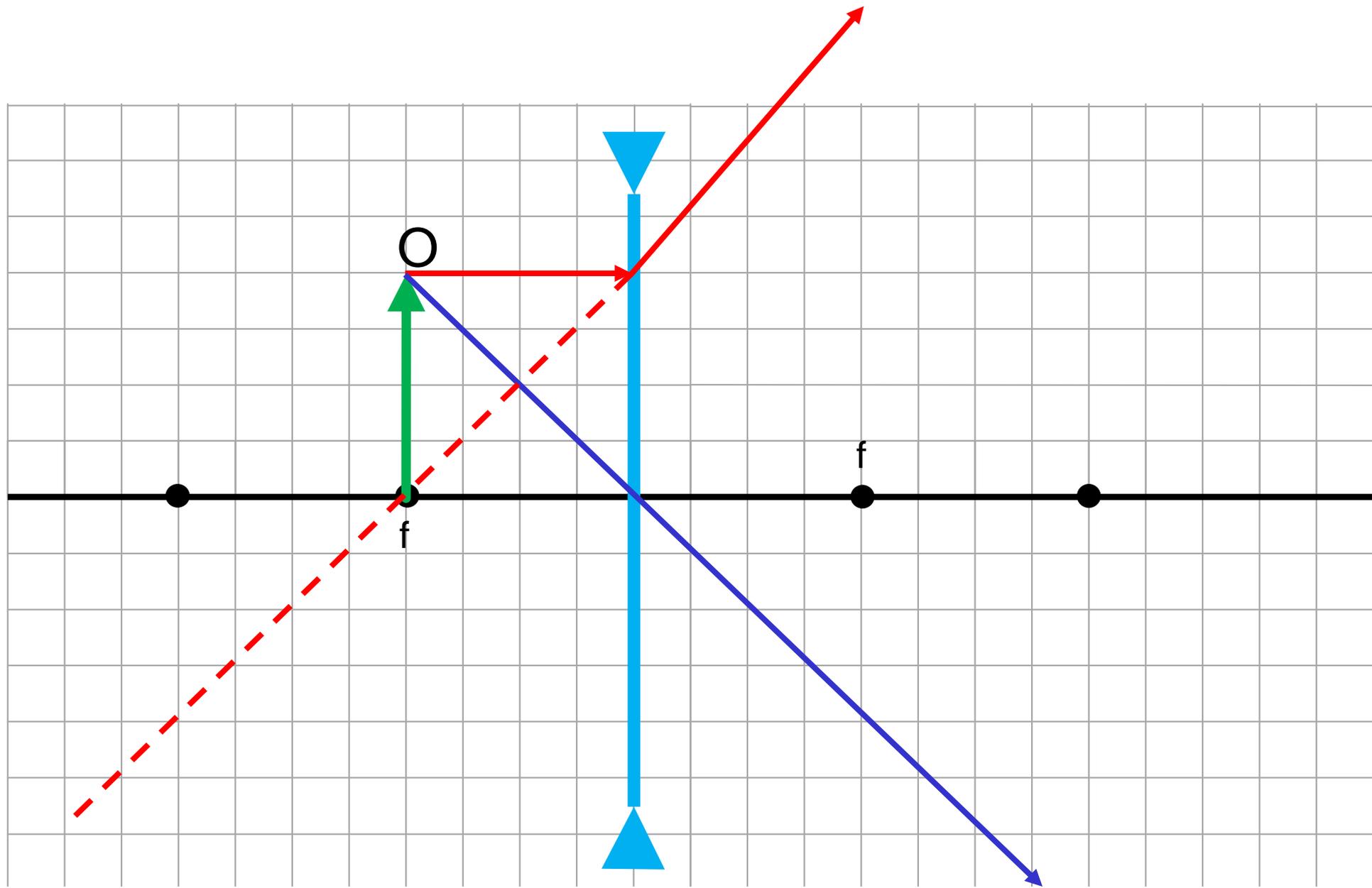


Figura 8: Objeto no foco

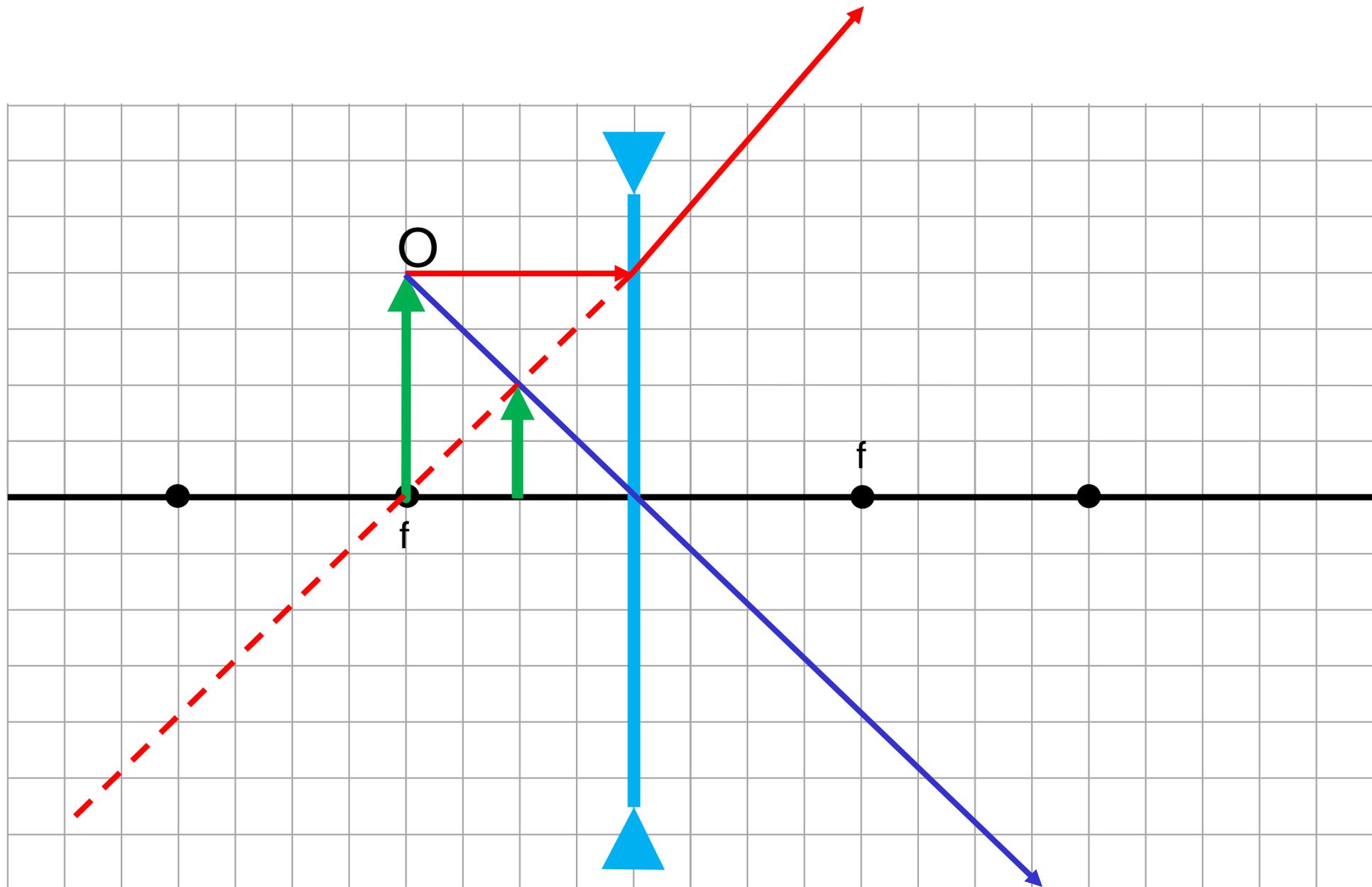


Figura 8: Objeto no foco

CLASSIFICAÇÃO:

Imagem

VIRTUAL

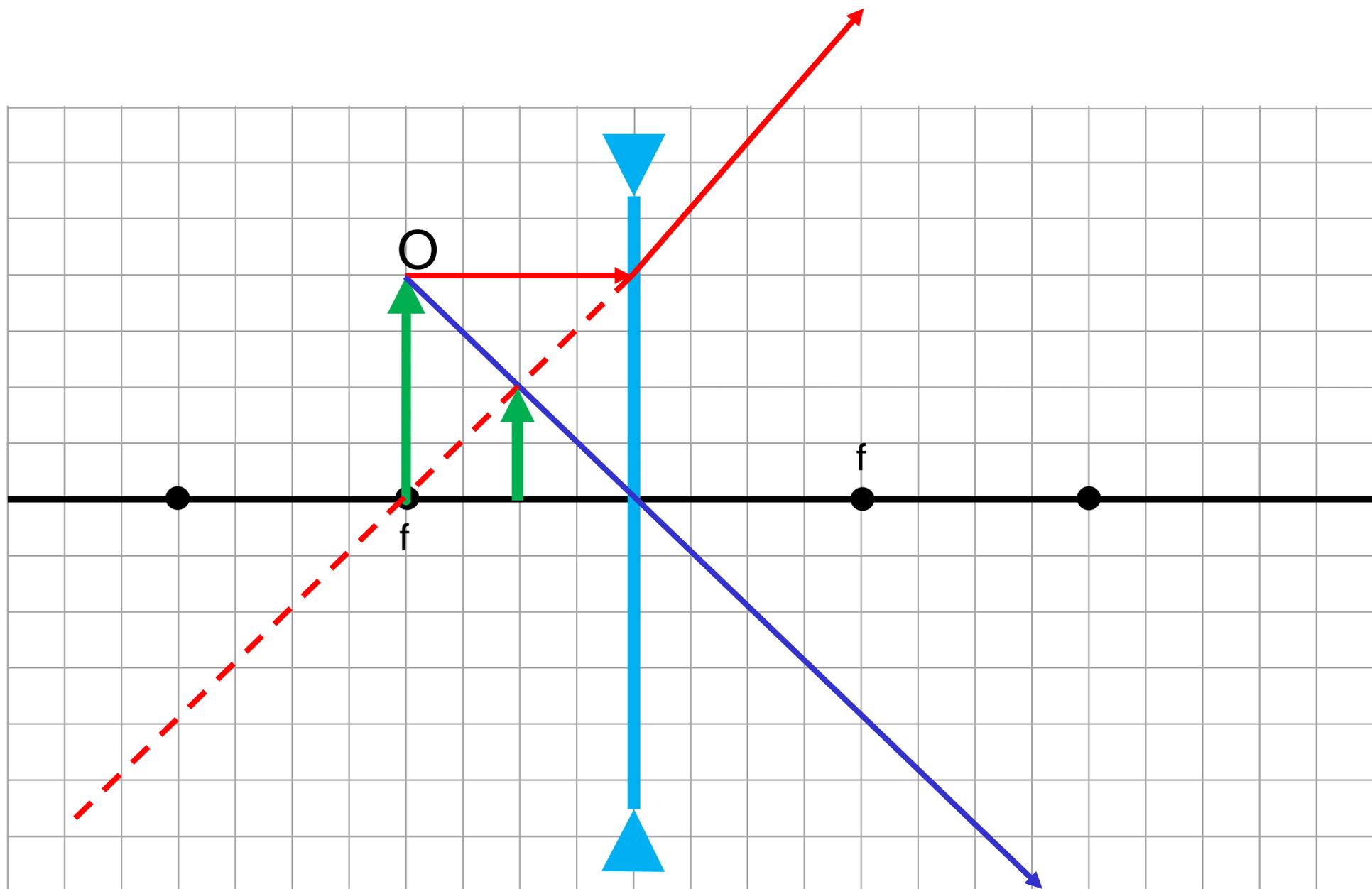


Figura 8: Objeto no foco

CLASSIFICAÇÃO:

Imagem

VIRTUAL  
DIREITA

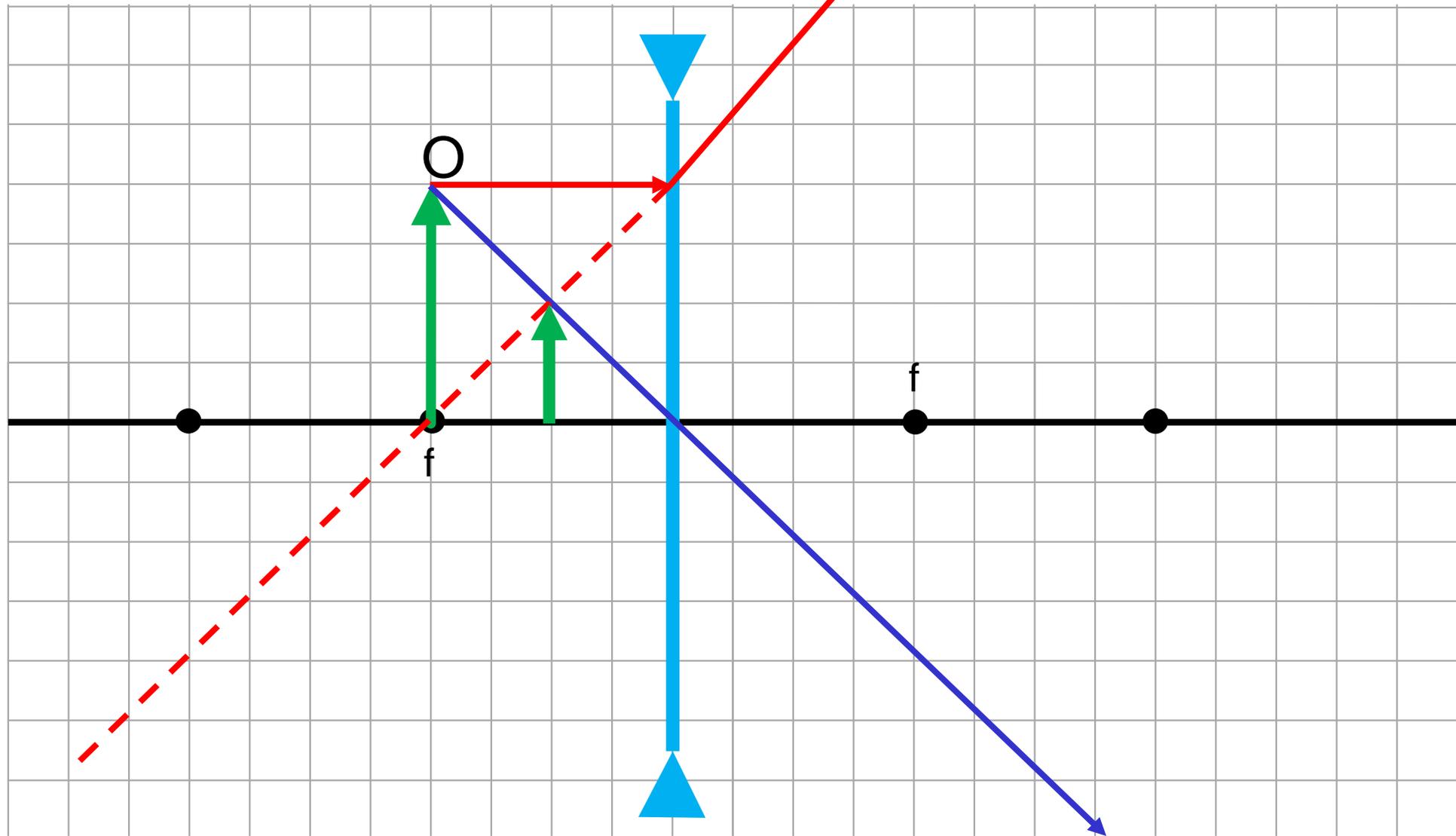


Figura 8: Objeto no foco

CLASSIFICAÇÃO:

Imagem

VIRTUAL  
DIREITA  
MENOR

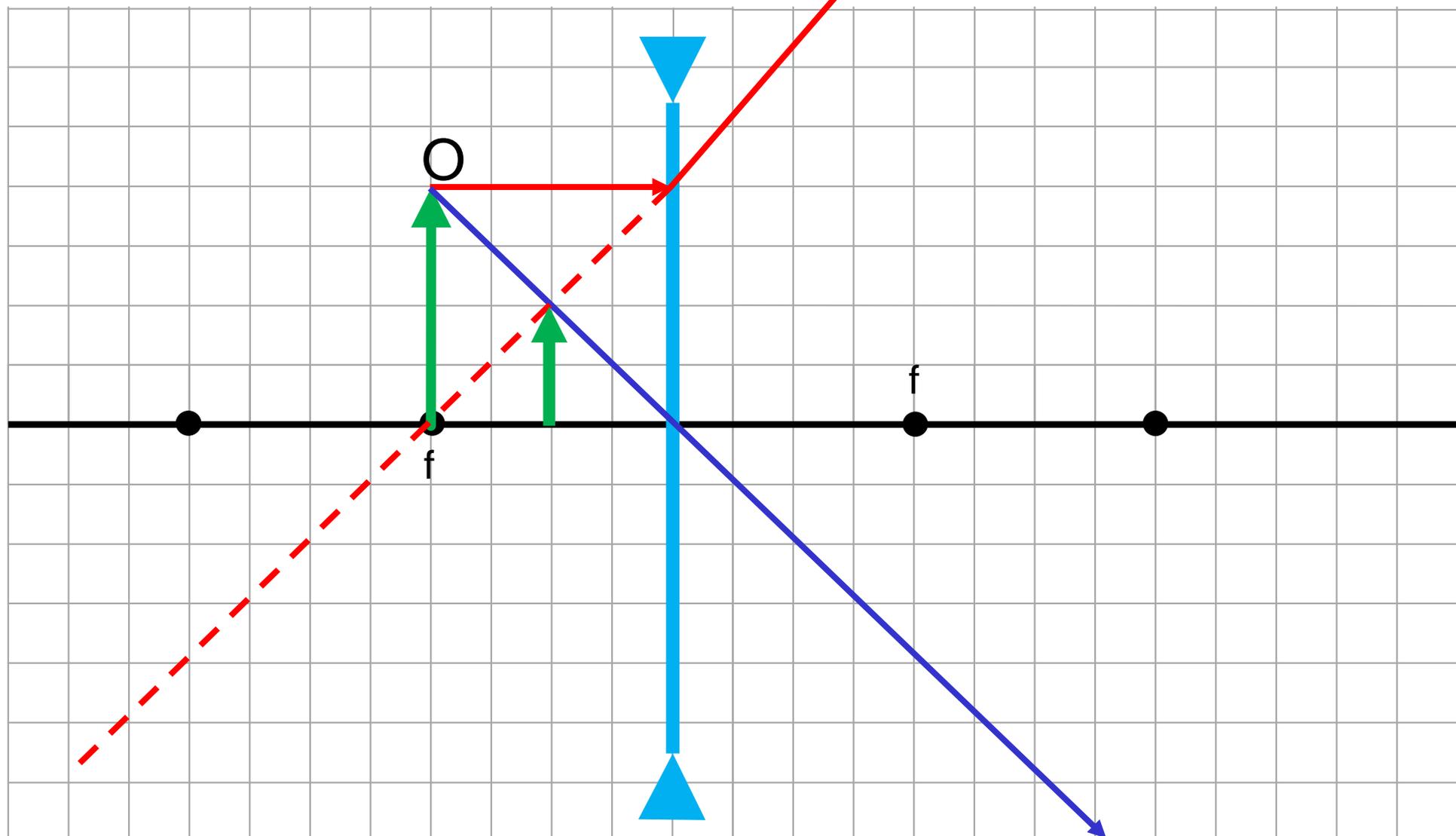
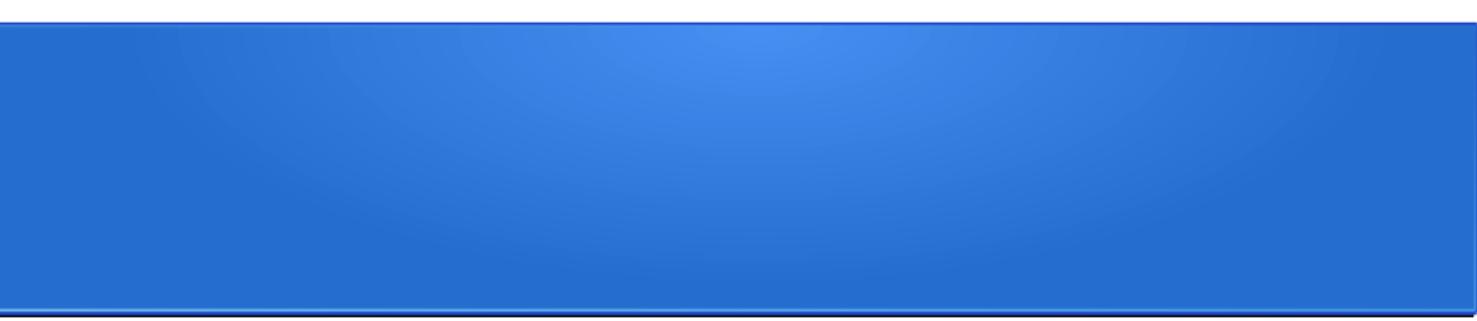


Figura 8: Objeto no foco



# Terceiro caso

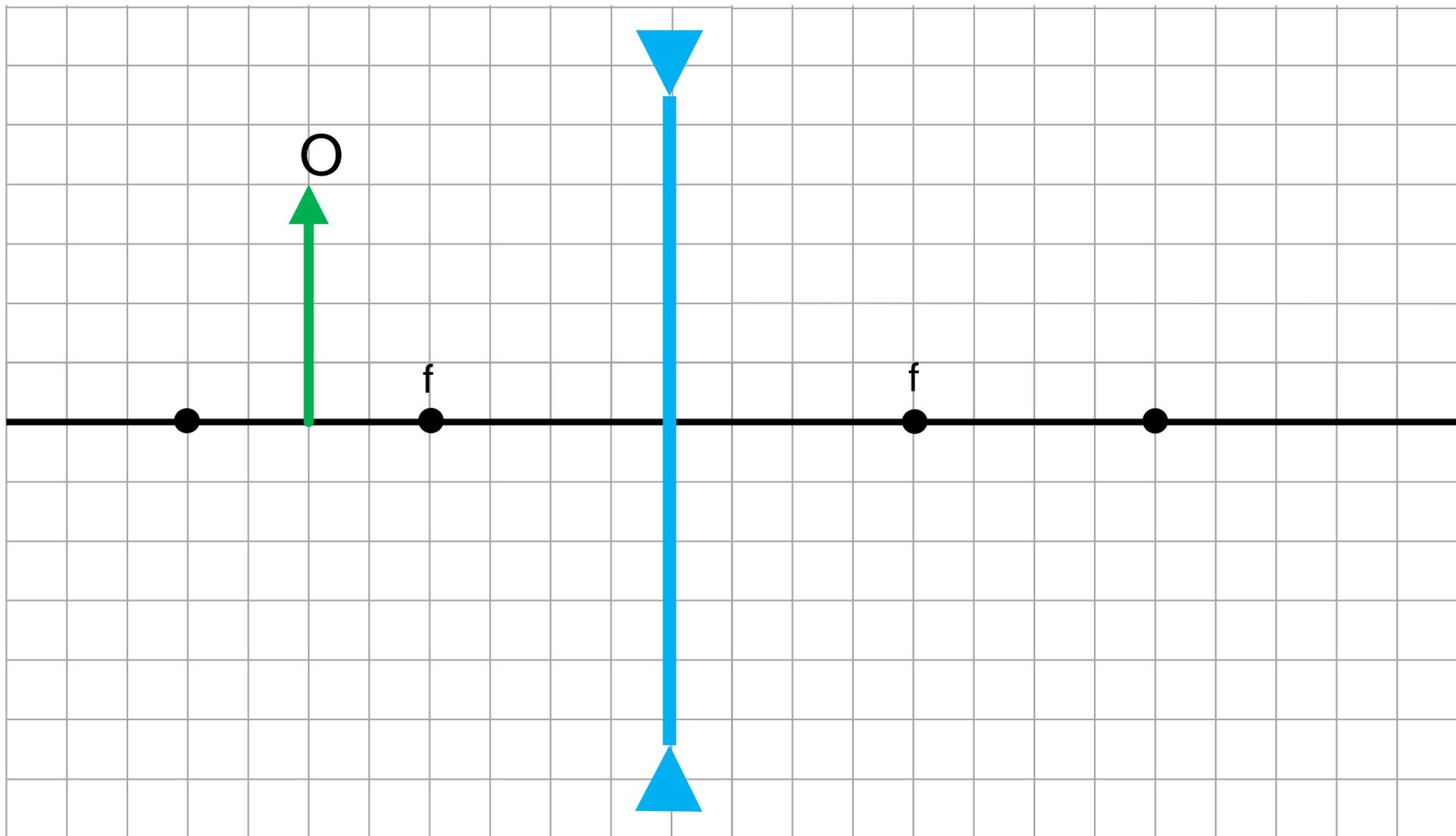


Figura 9: Objeto entre o foco e o anti-principal

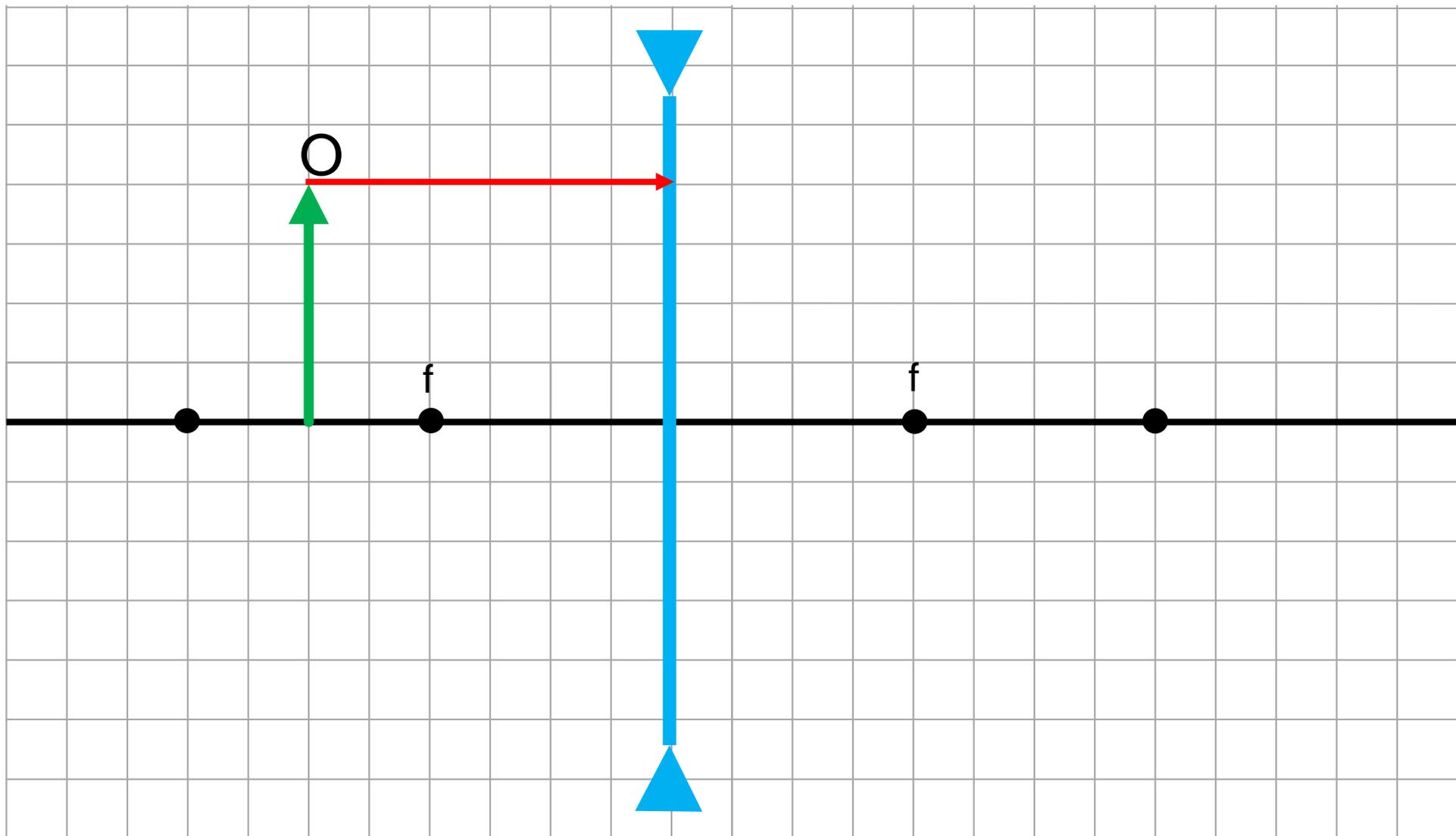


Figura 9: Objeto entre o foco e o anti-principal

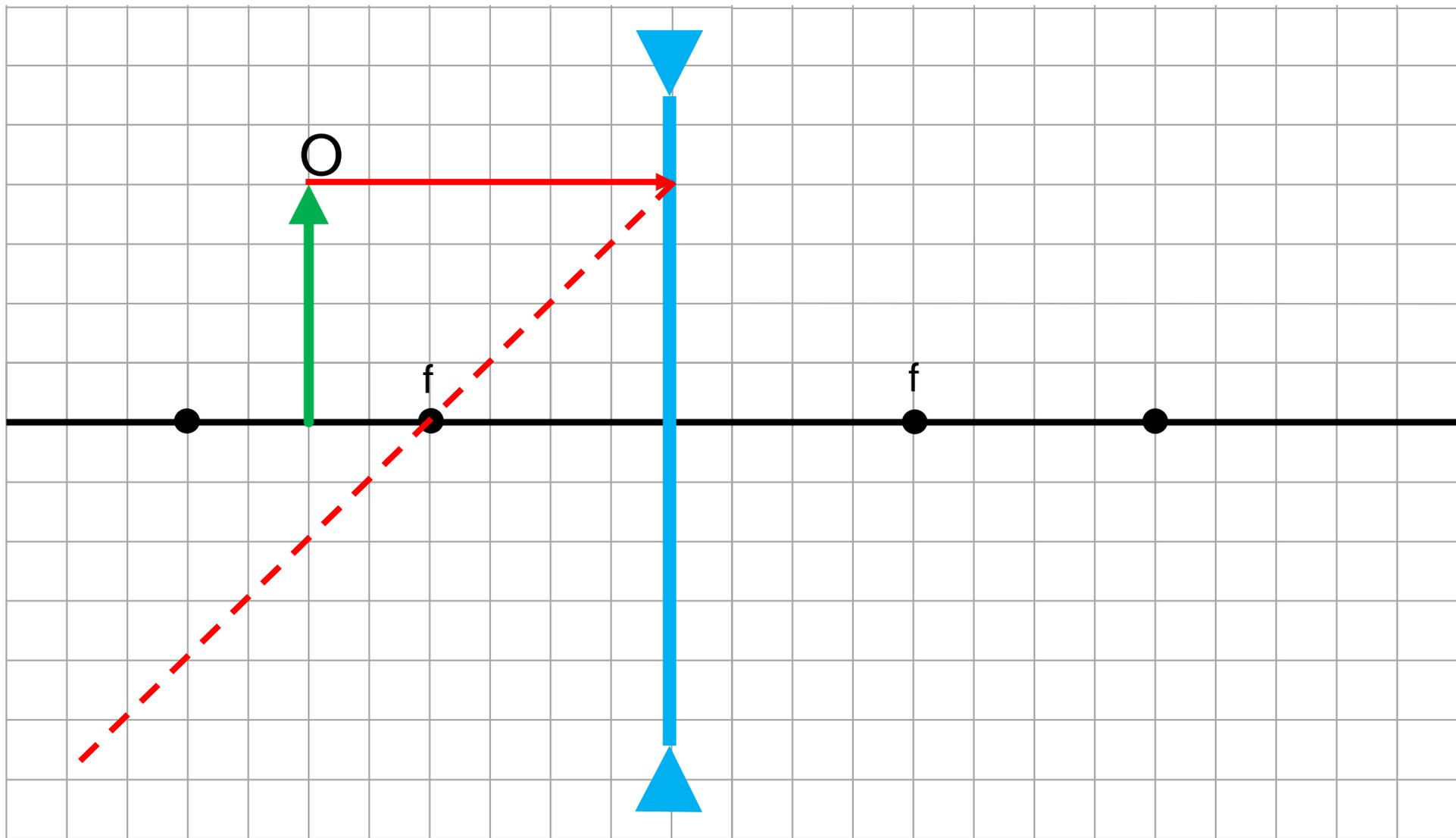


Figura 9: Objeto entre o foco e o anti-principal

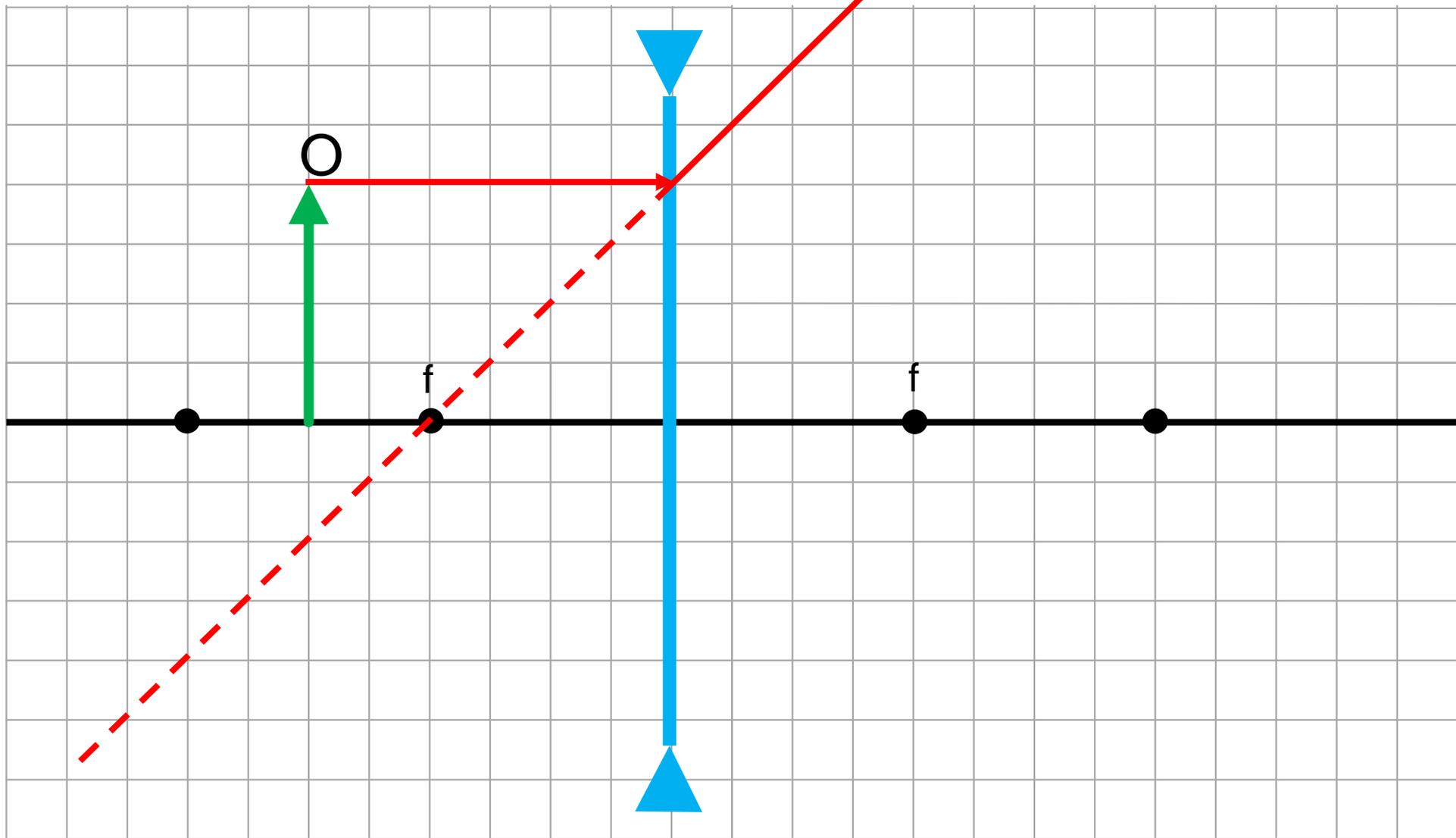


Figura 9: Objeto entre o foco e o anti-principal

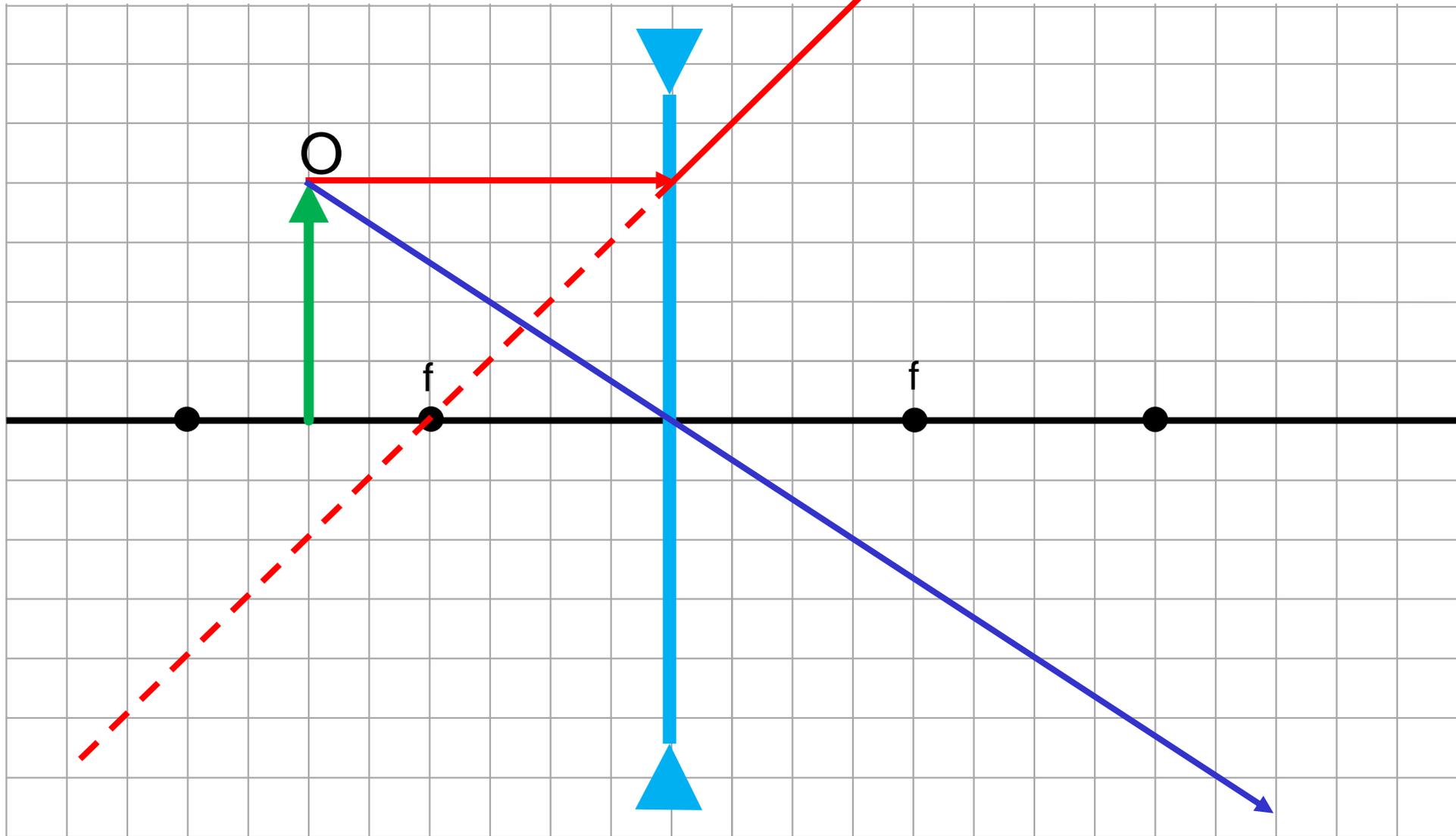


Figura 9: Objeto entre o foco e o anti-principal

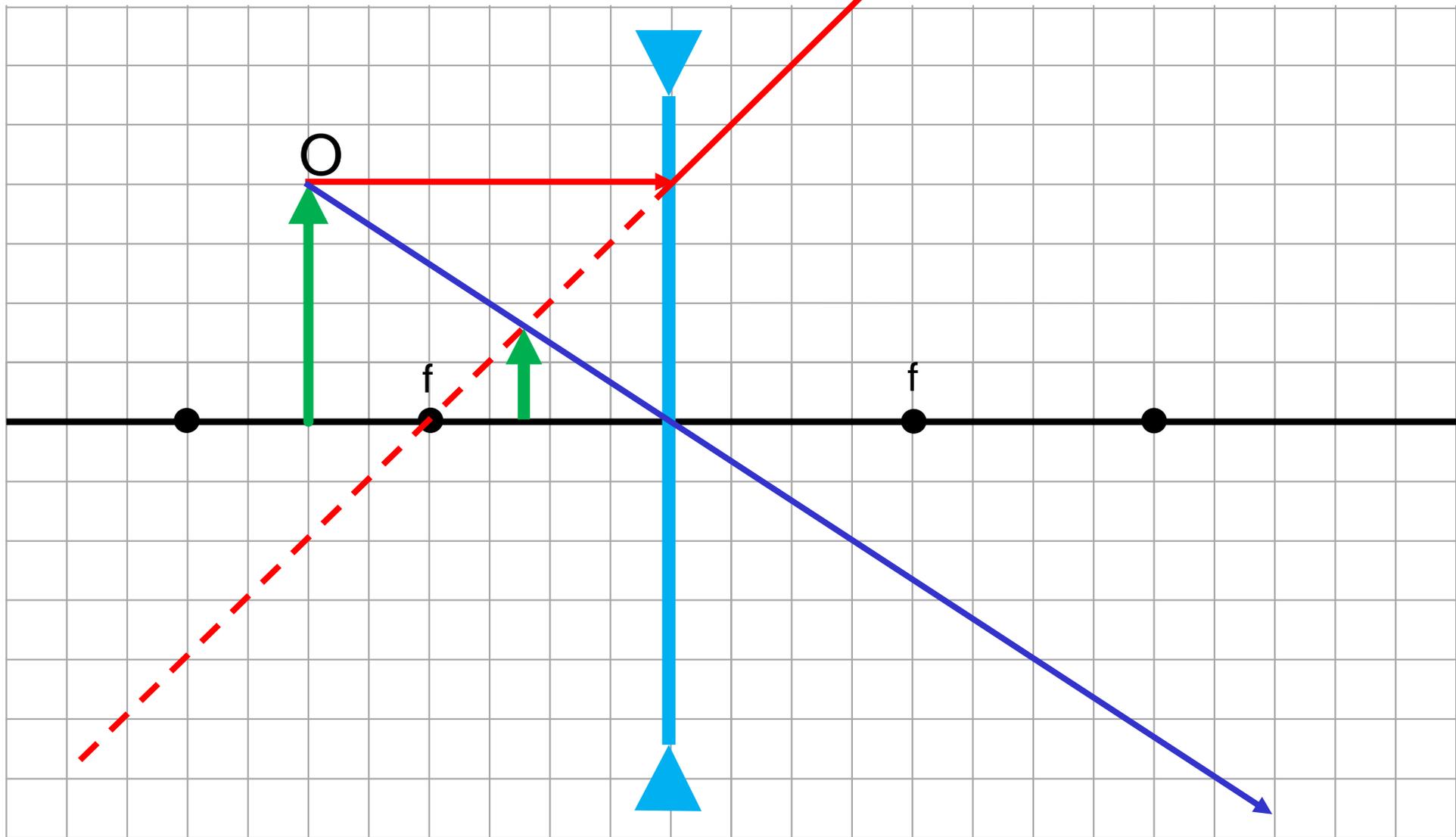


Figura 9: Objeto entre o foco e o anti-principal

CLASSIFICAÇÃO: Imagem VIRTUAL

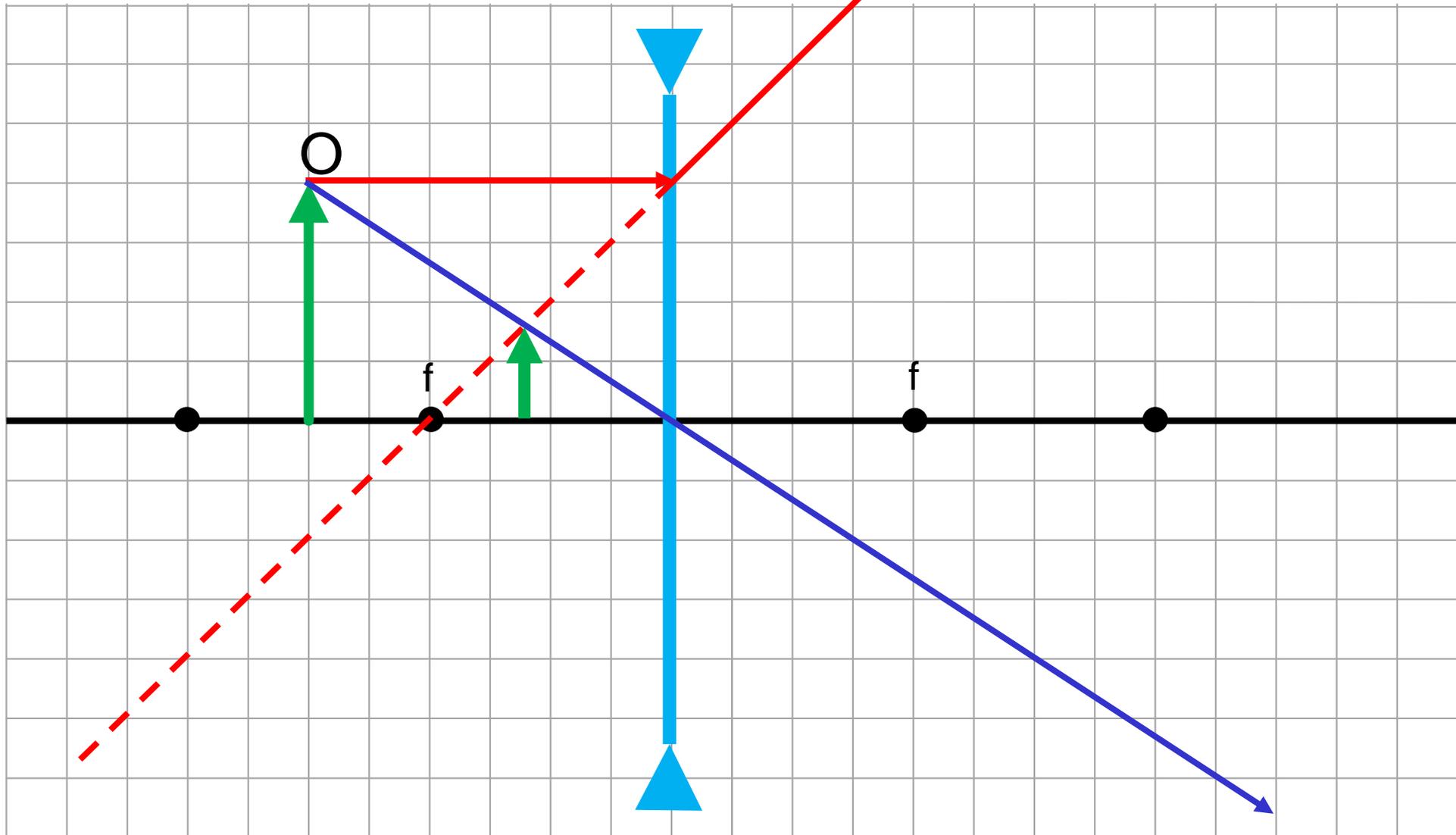


Figura 9: Objeto entre o foco e o anti-principal

CLASSIFICAÇÃO:

Imagem

VIRTUAL  
DIREITA

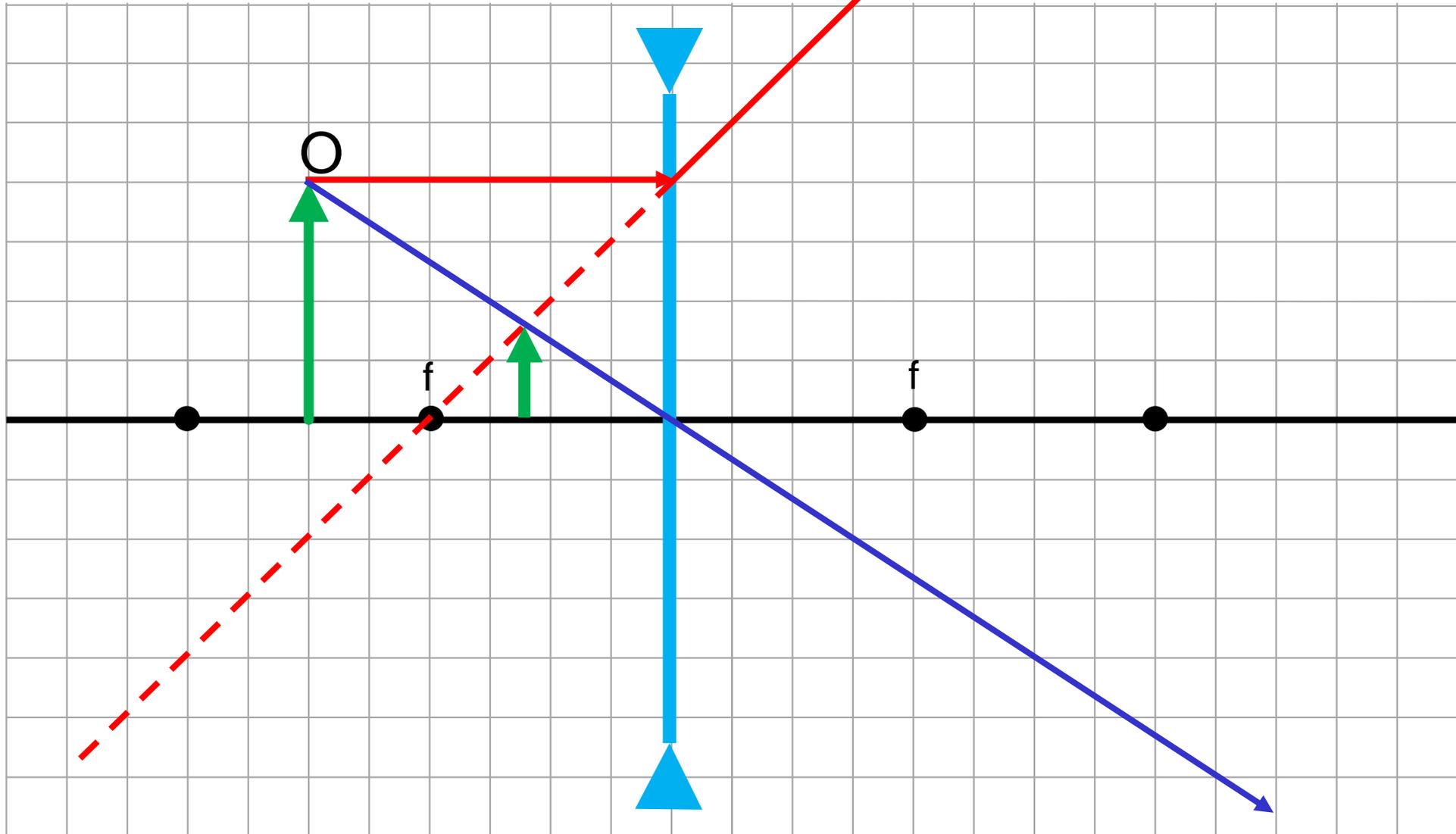


Figura 9: Objeto entre o foco e o anti-principal

CLASSIFICAÇÃO:

Imagem

VIRTUAL  
DIREITA  
MENOR

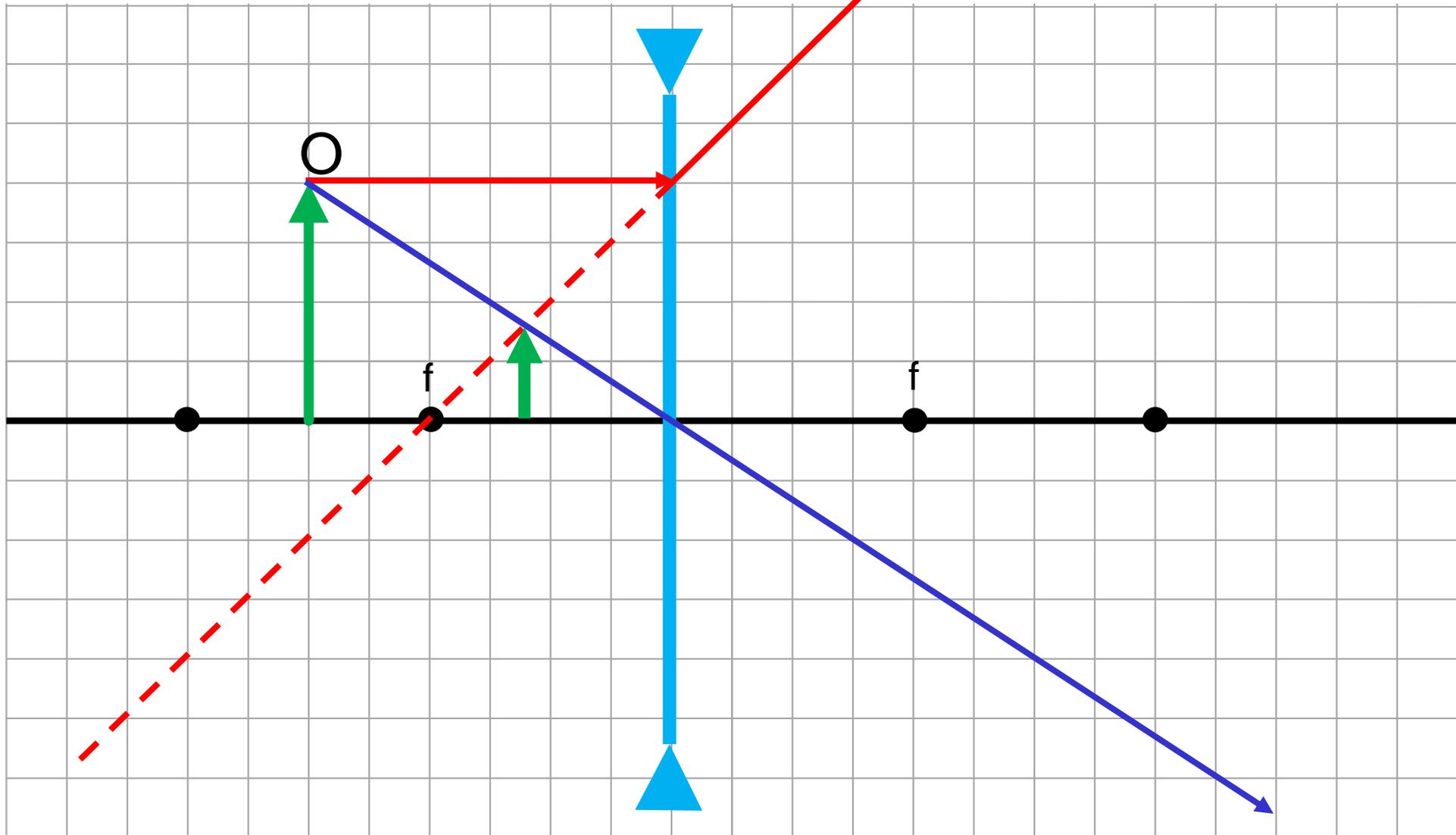
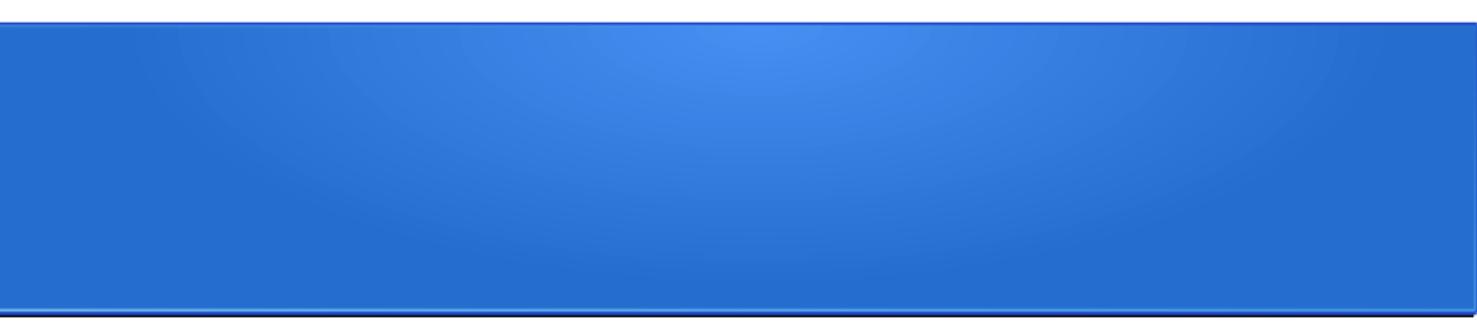


Figura 9: Objeto entre o foco e o anti-principal



Quarto caso

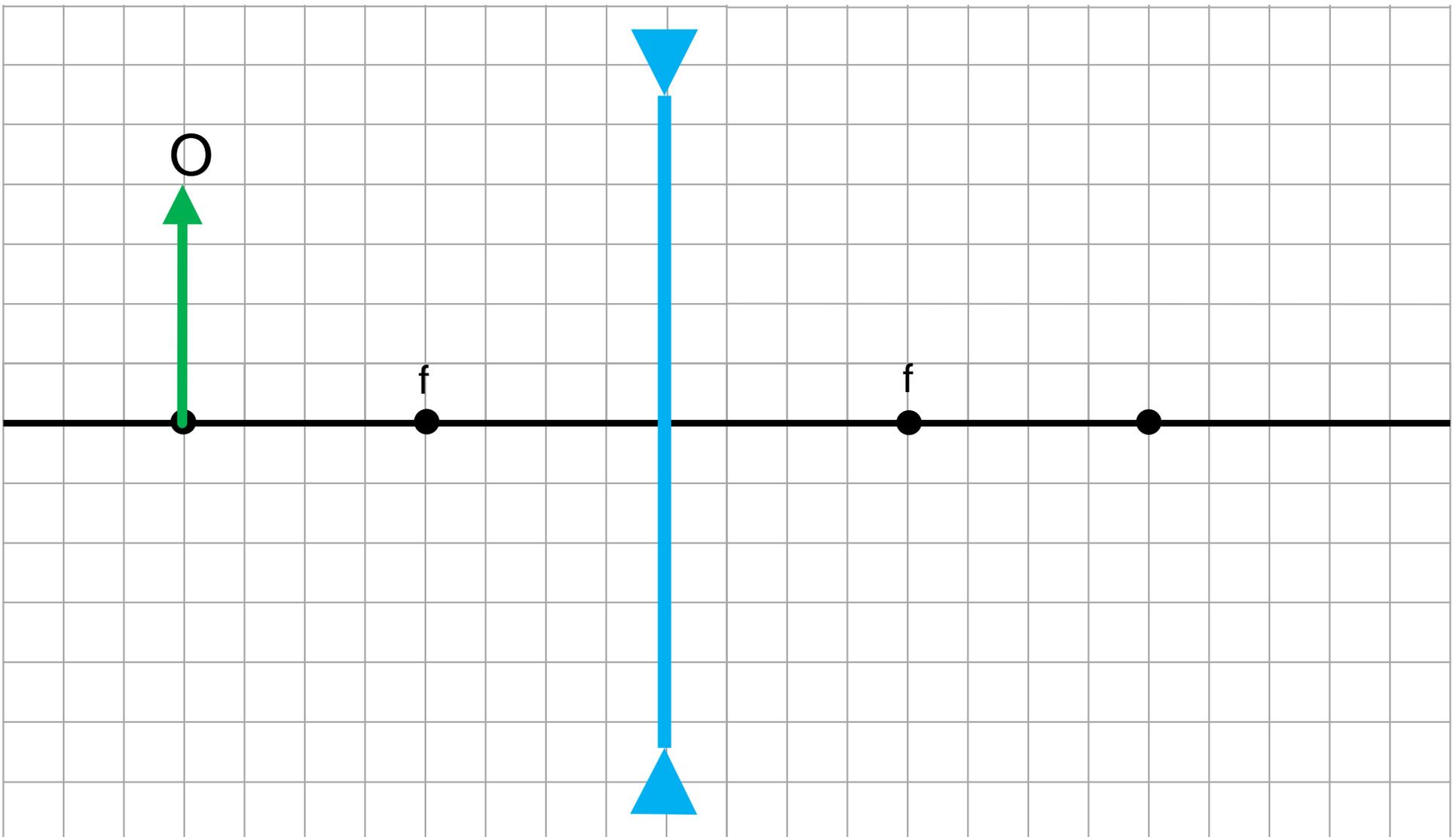


Figura 10: Objeto no anti-principal

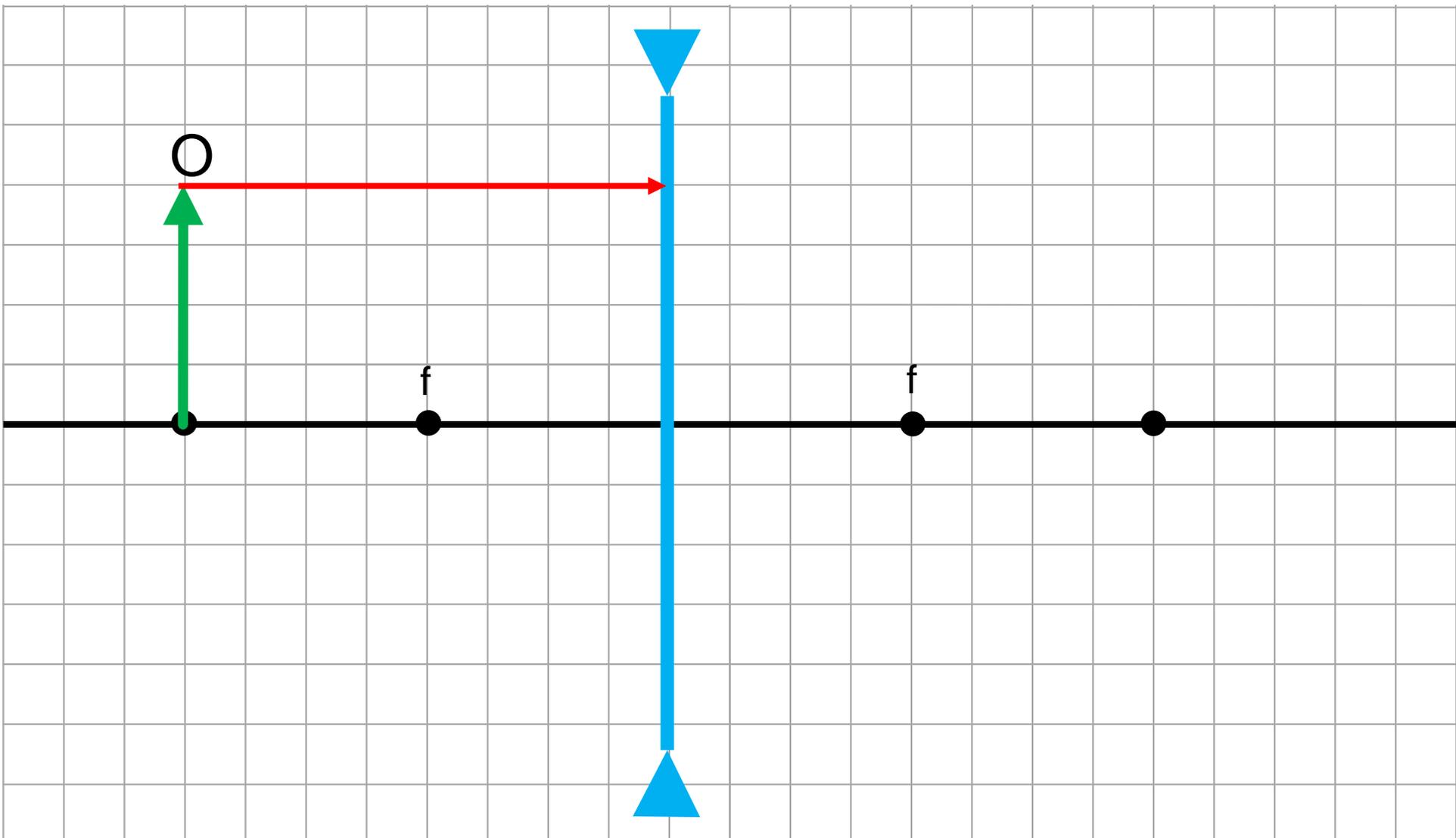


Figura 10: Objeto no anti-principal

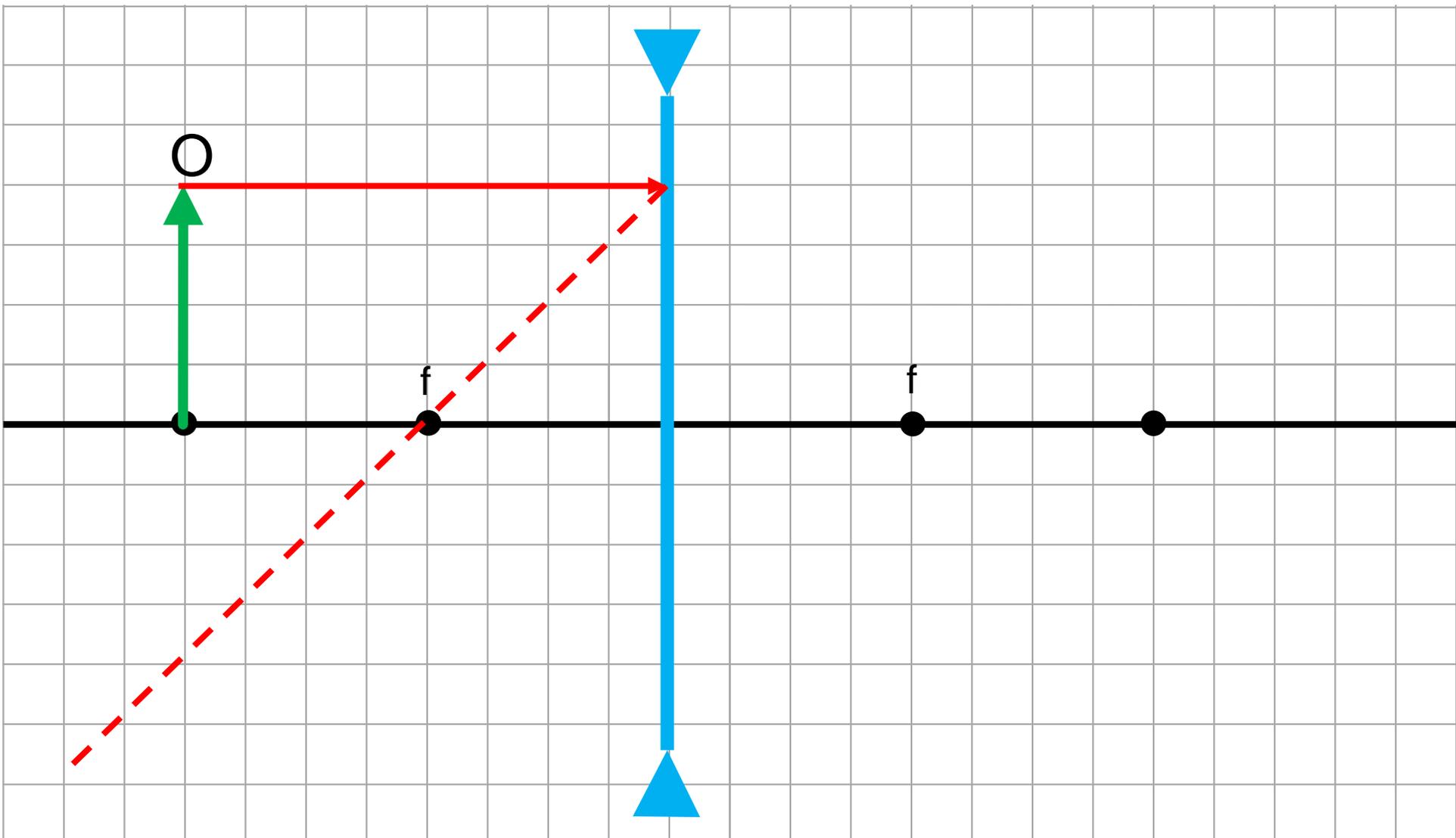


Figura 10: Objeto no anti-principal

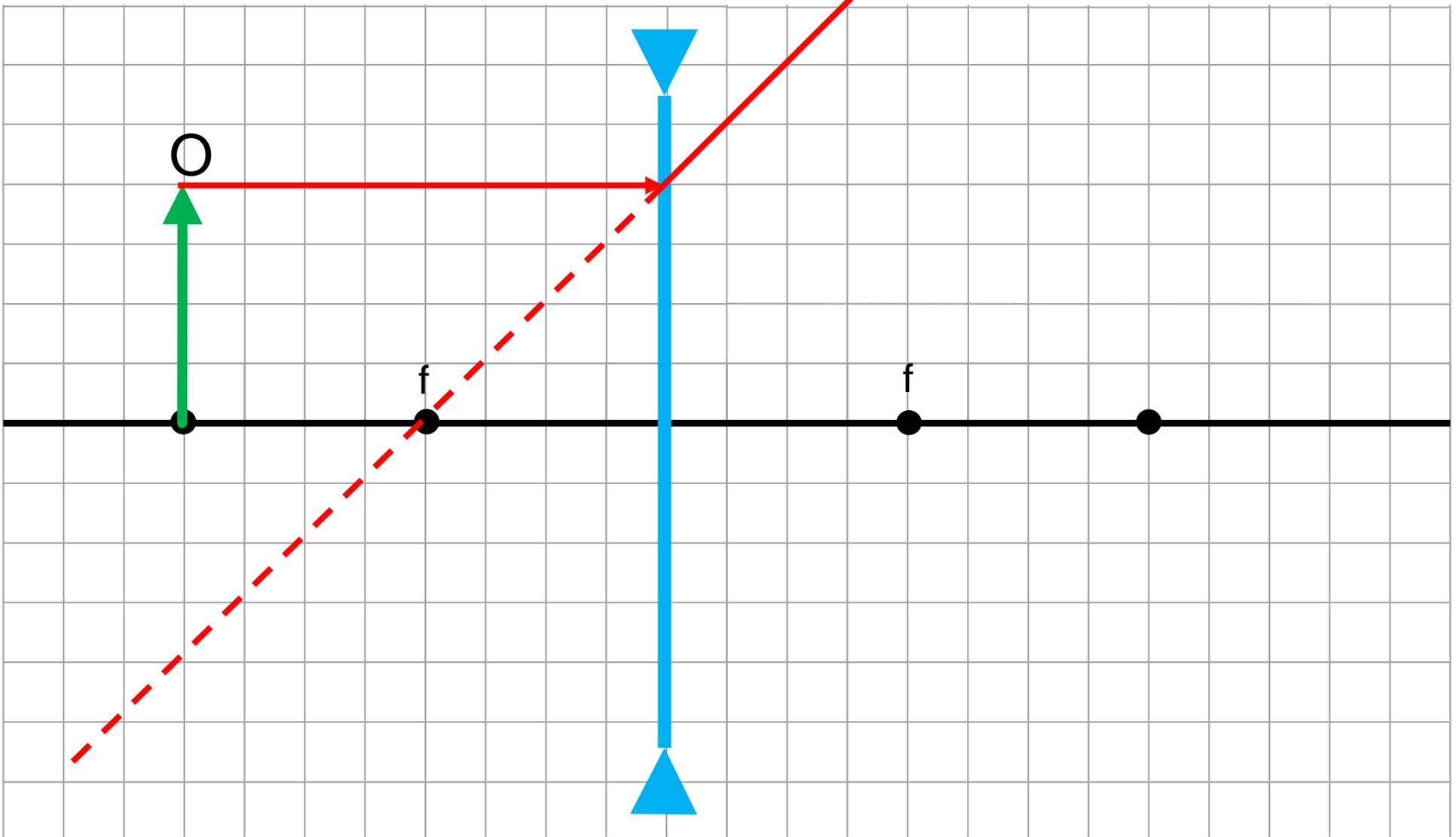


Figura 10: Objeto no anti-principal

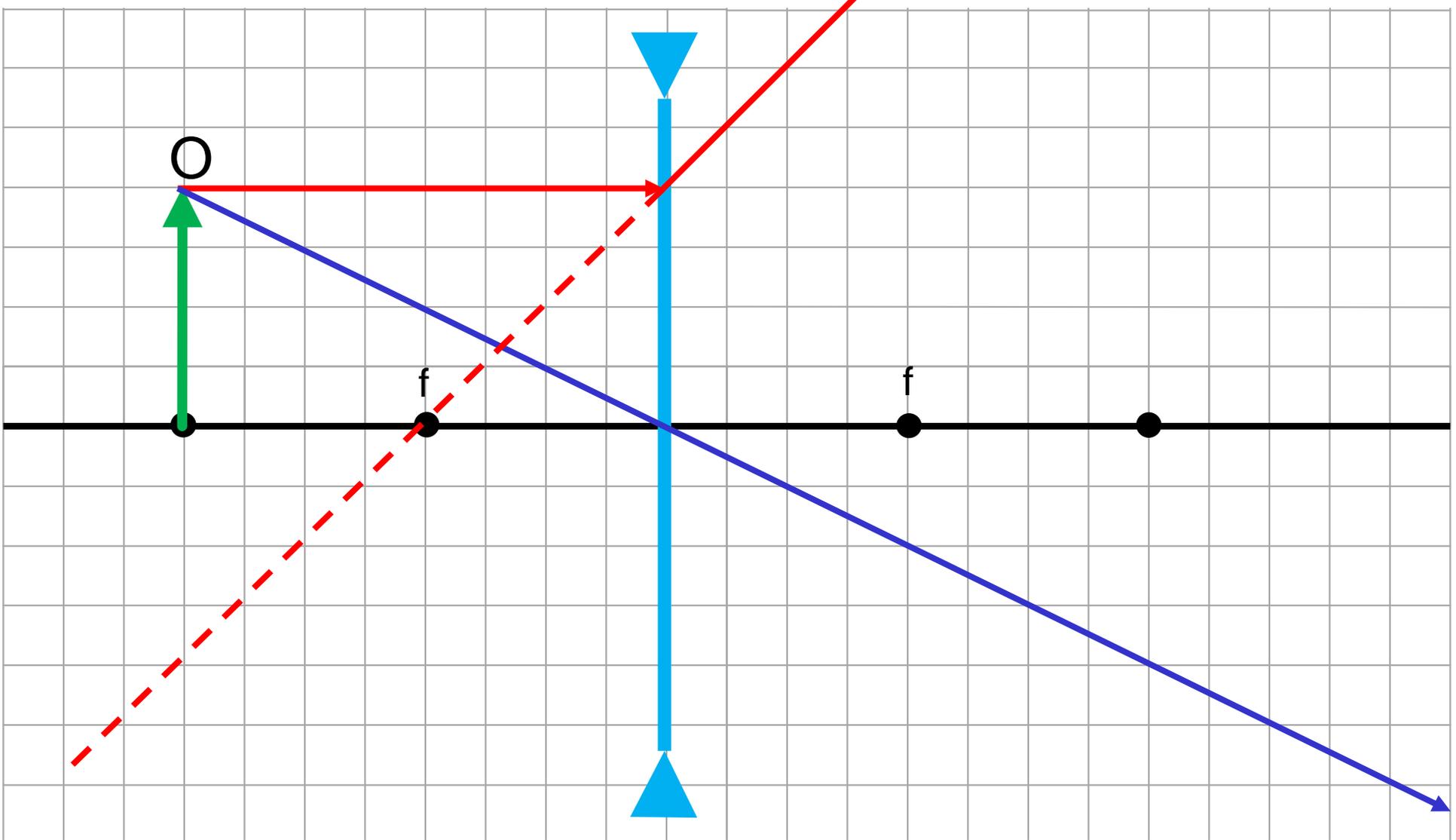


Figura 10: Objeto no anti-principal

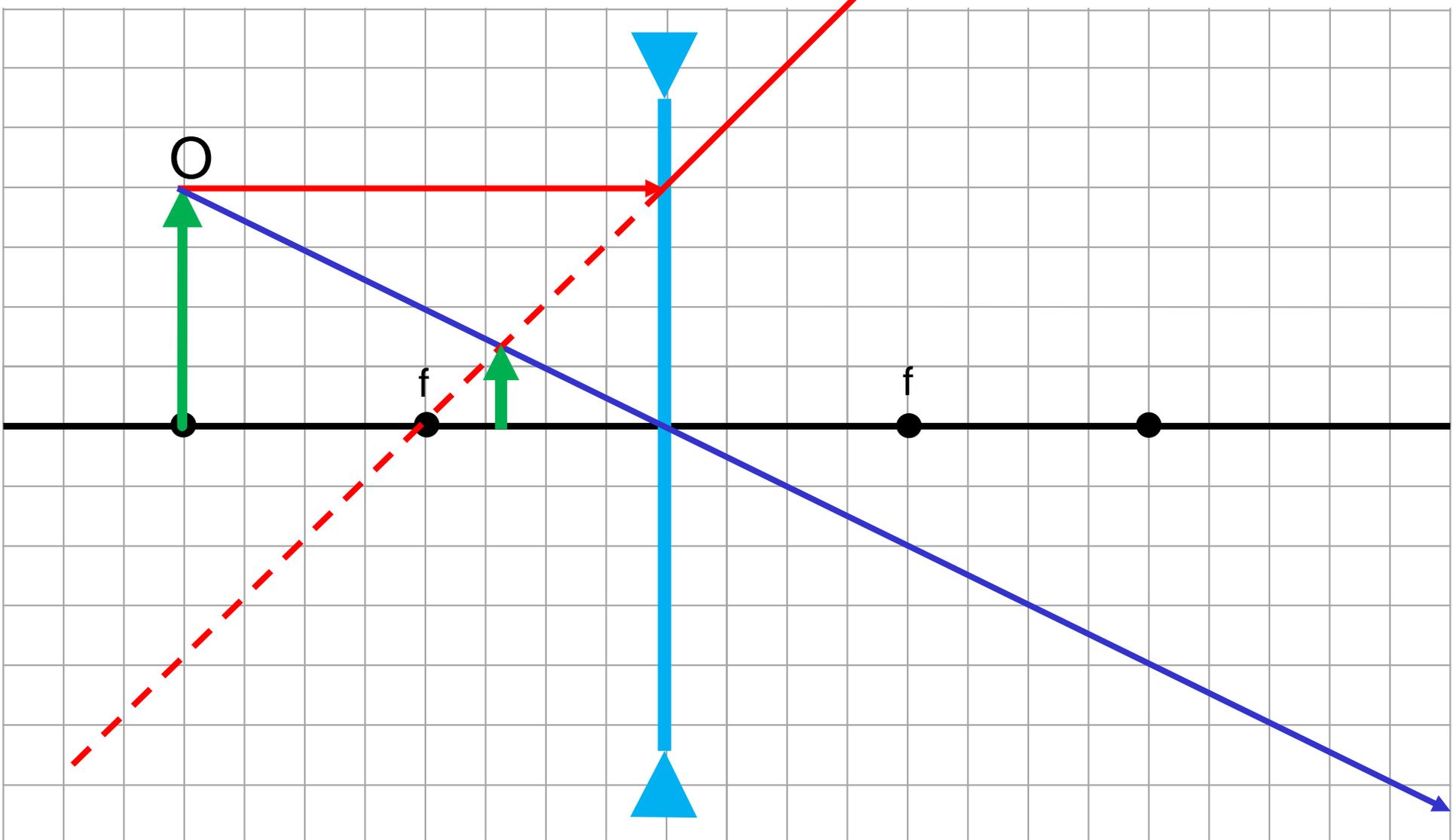


Figura 10: Objeto no anti-principal

CLASSIFICAÇÃO:

Imagem

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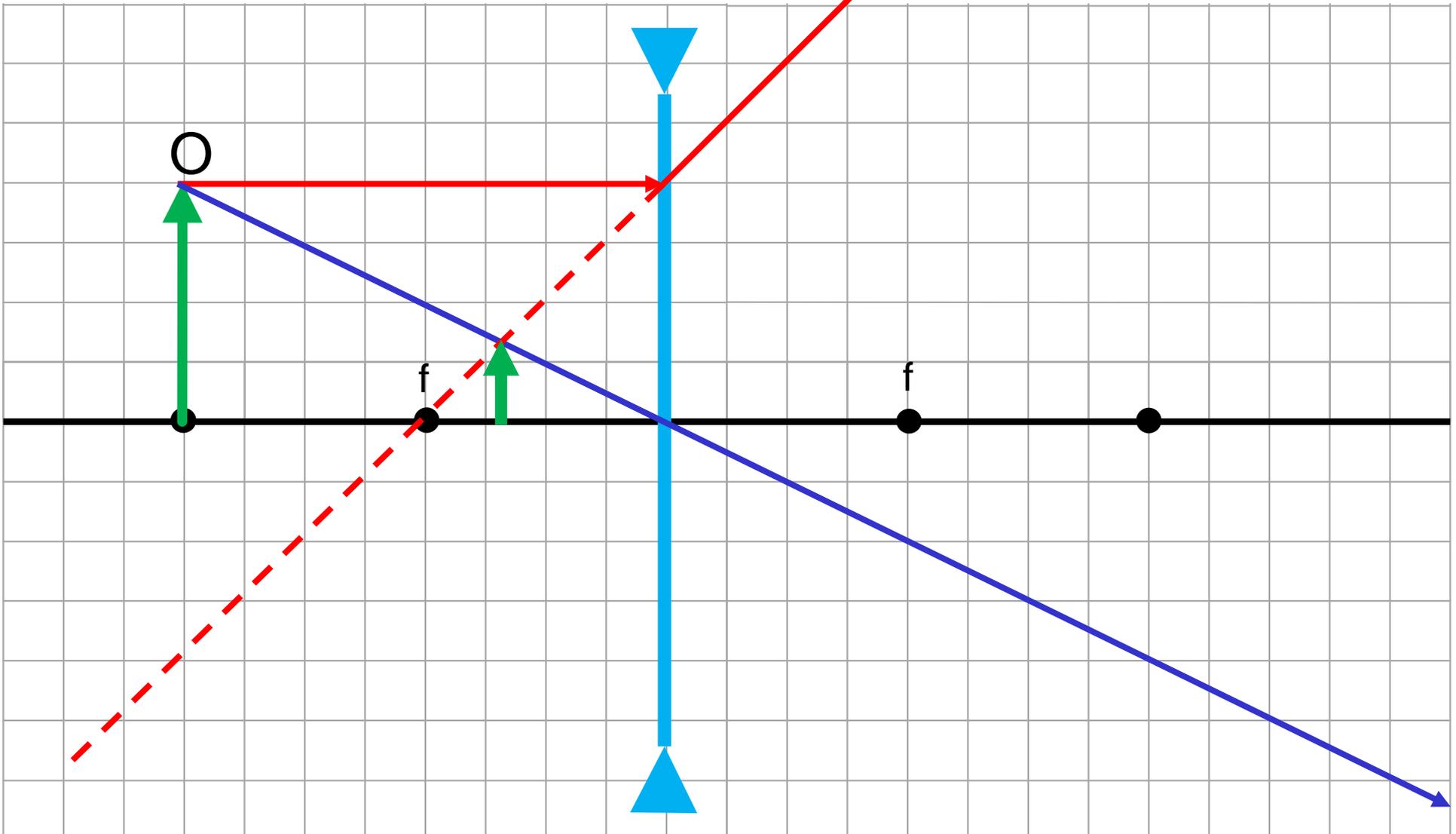


Figura 10: Objeto no anti-principal

CLASSIFICAÇÃO:

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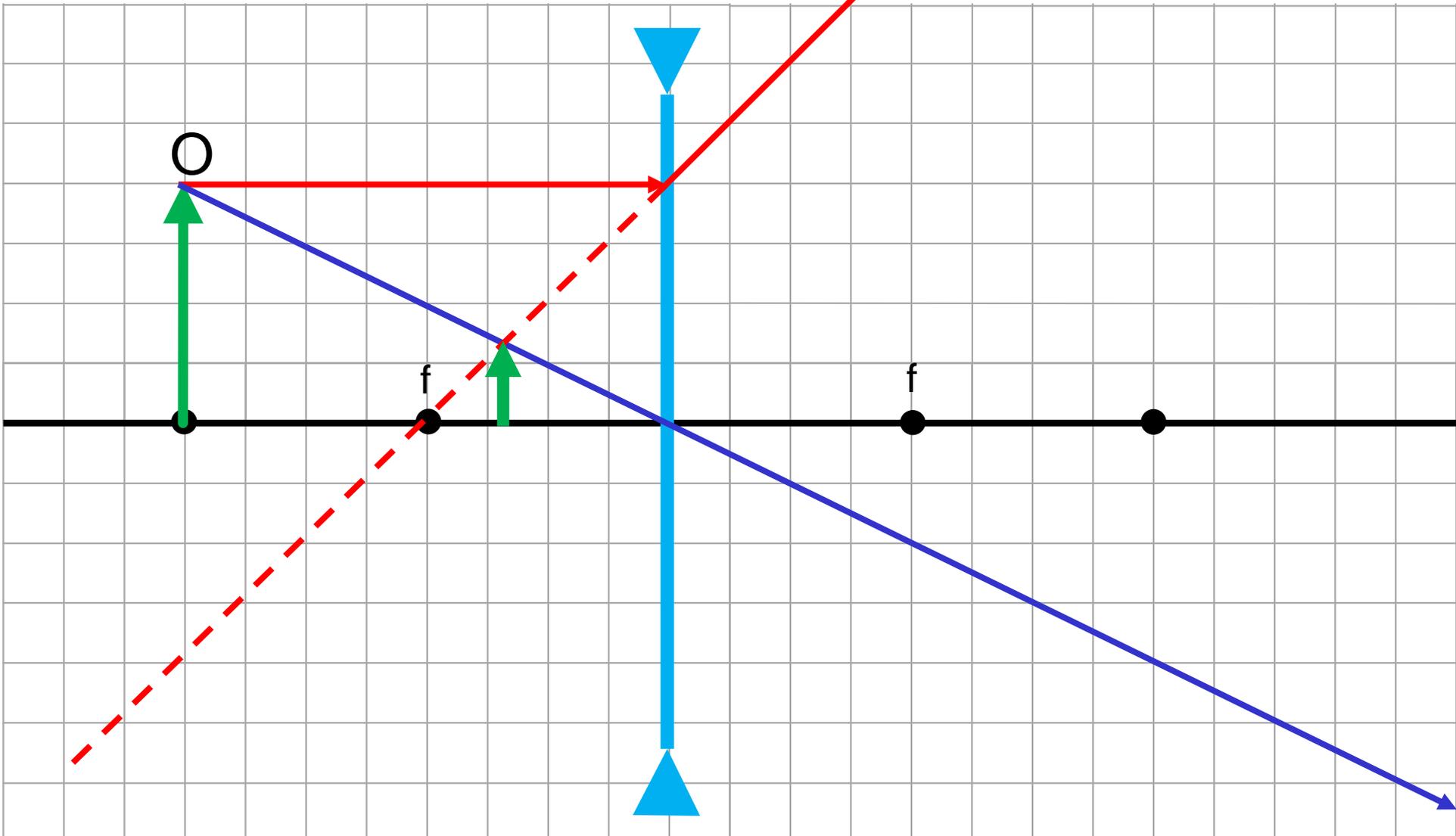


Figura 10: Objeto no anti-principal

CLASSIFICAÇÃO:

Imagem

VIRTUAL  
DIREITA  
MENOR

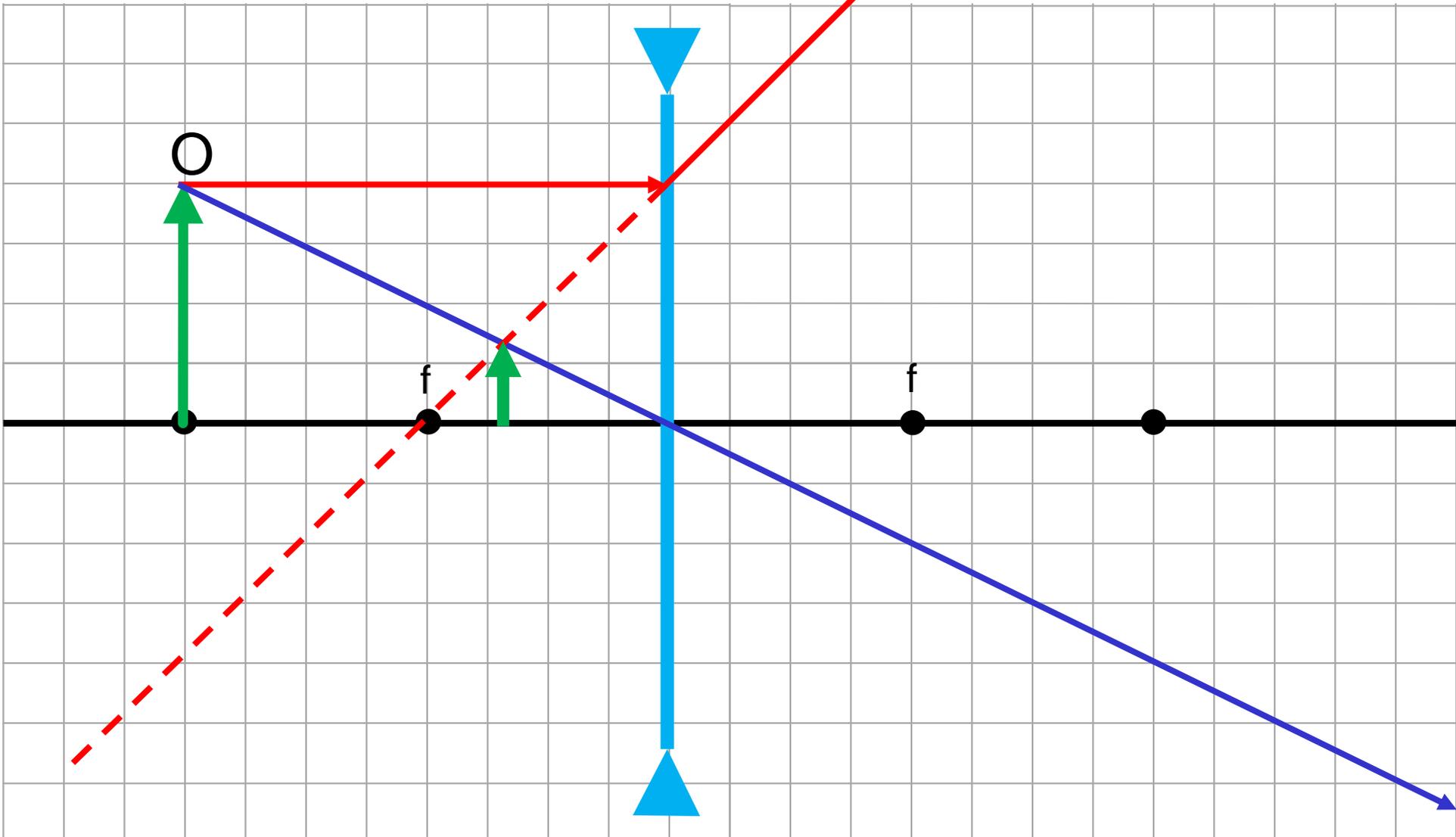
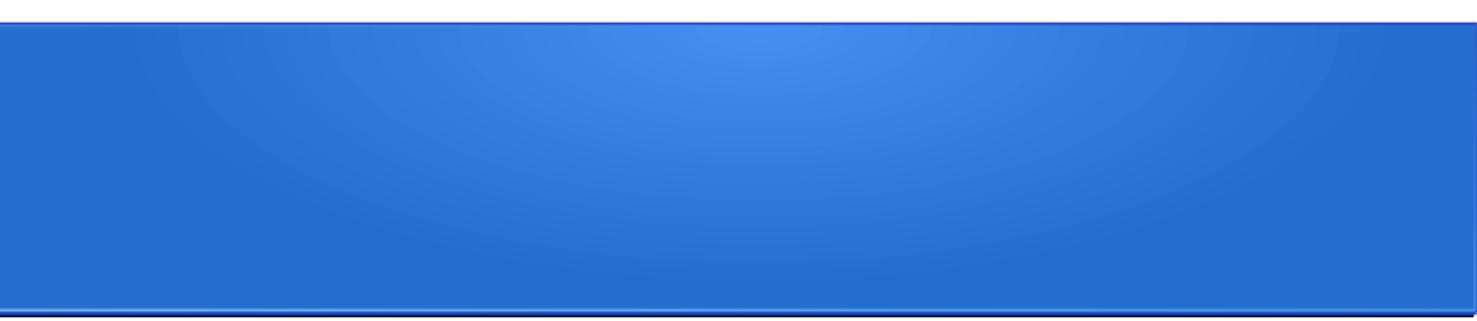


Figura 10: Objeto no anti-principal



# Quinto caso

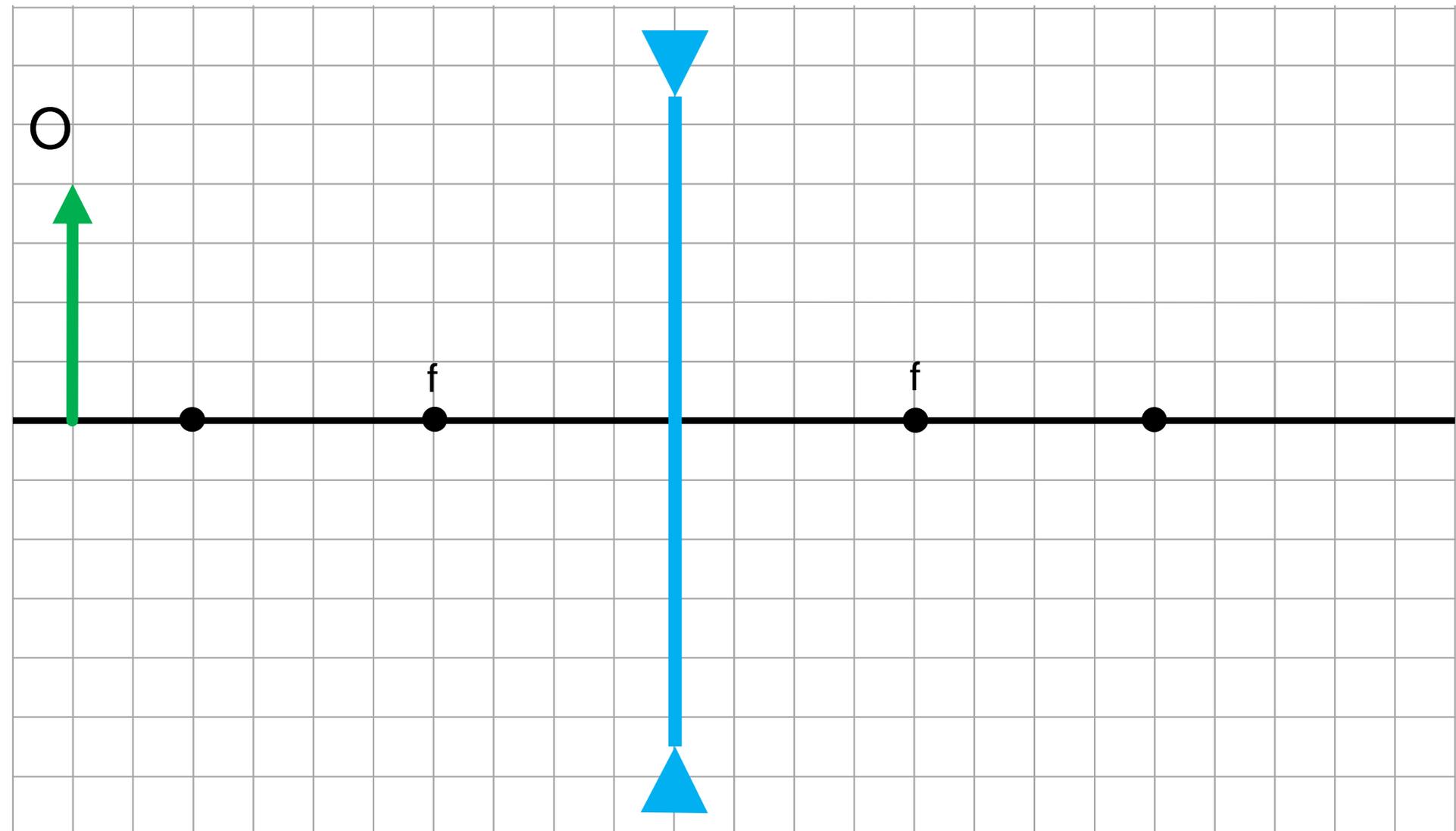


Figura 11: Objeto além do anti-principal

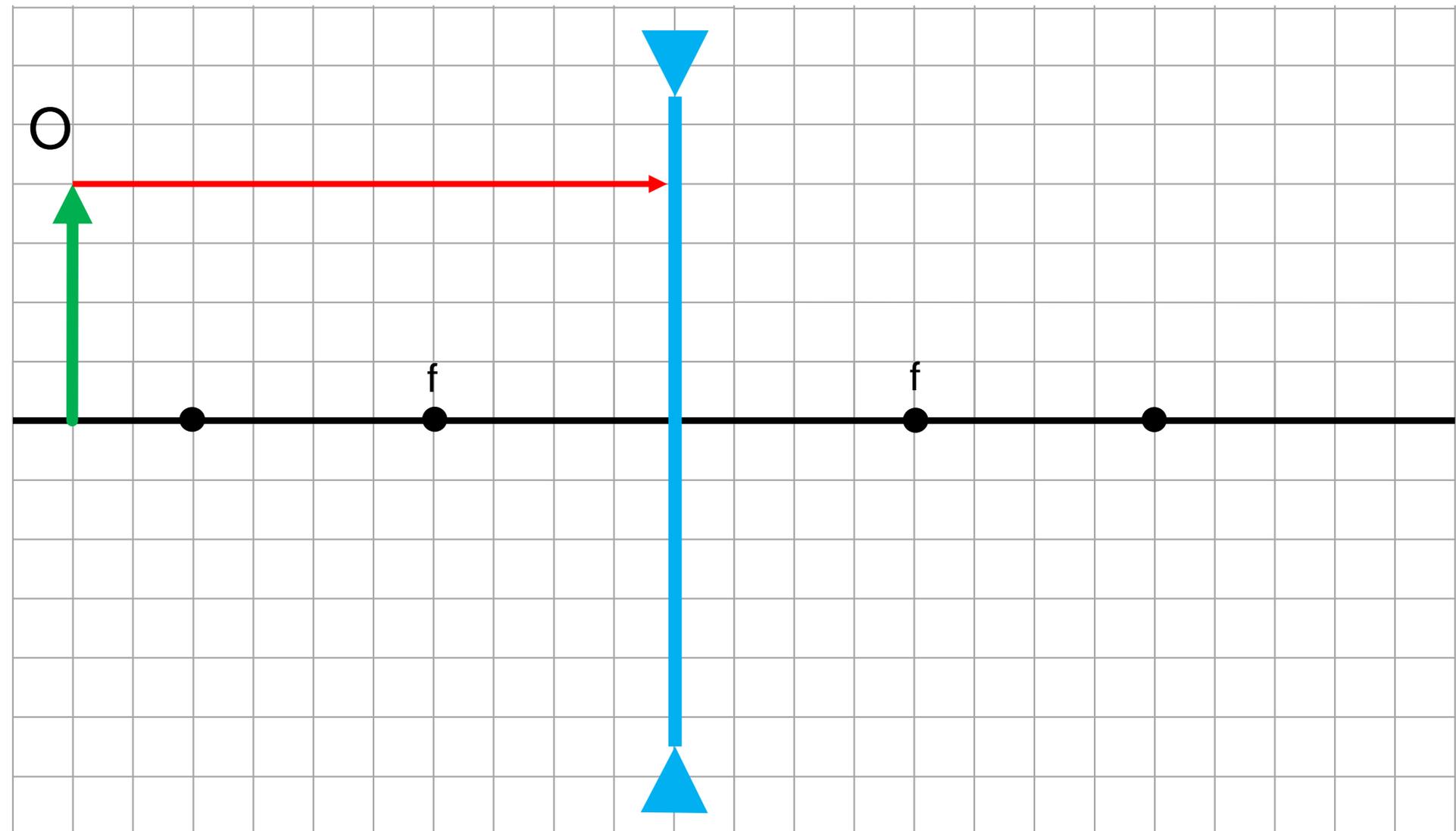


Figura 11: Objeto além do anti-principal

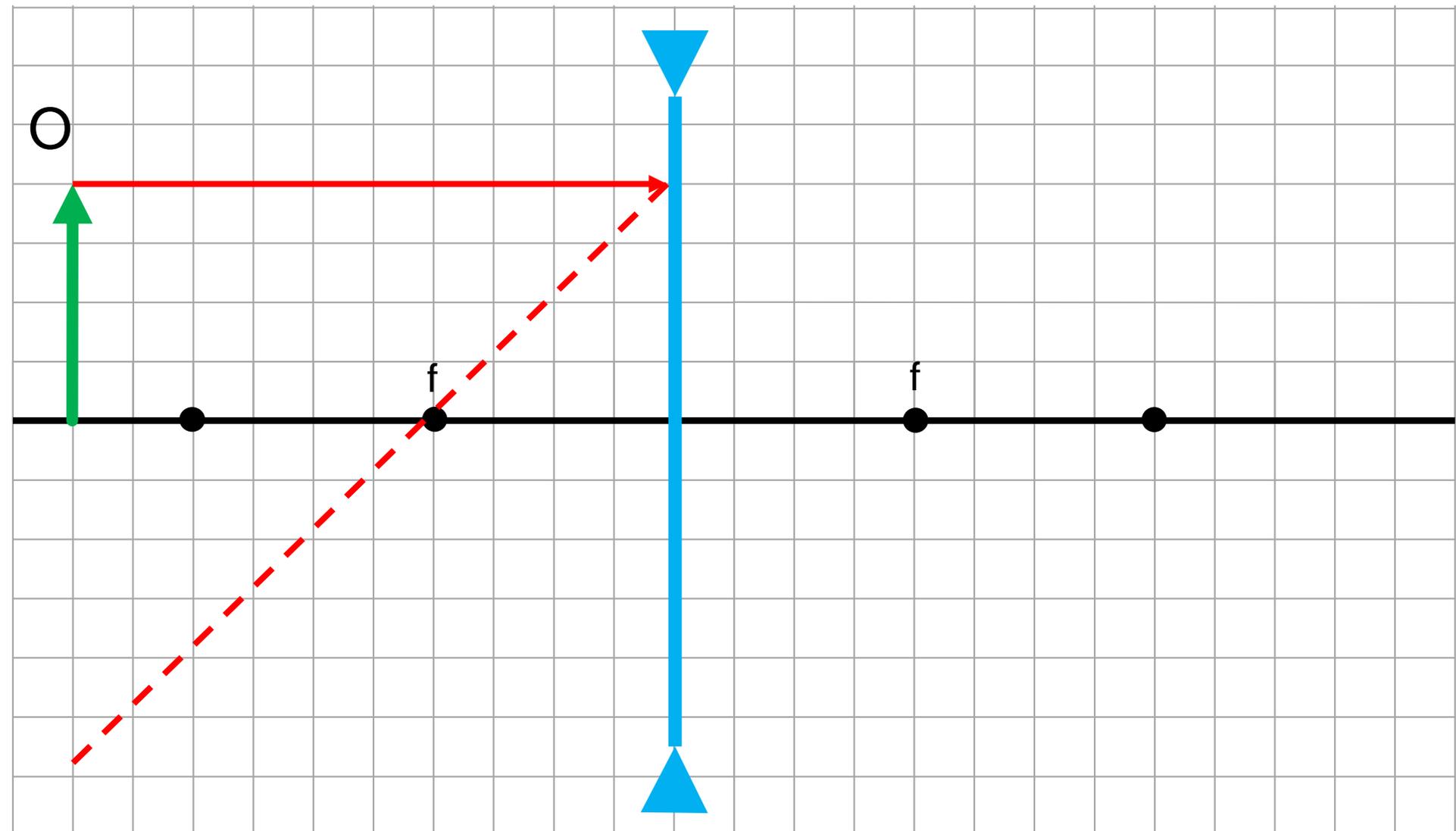


Figura 11: Objeto além do anti-principal

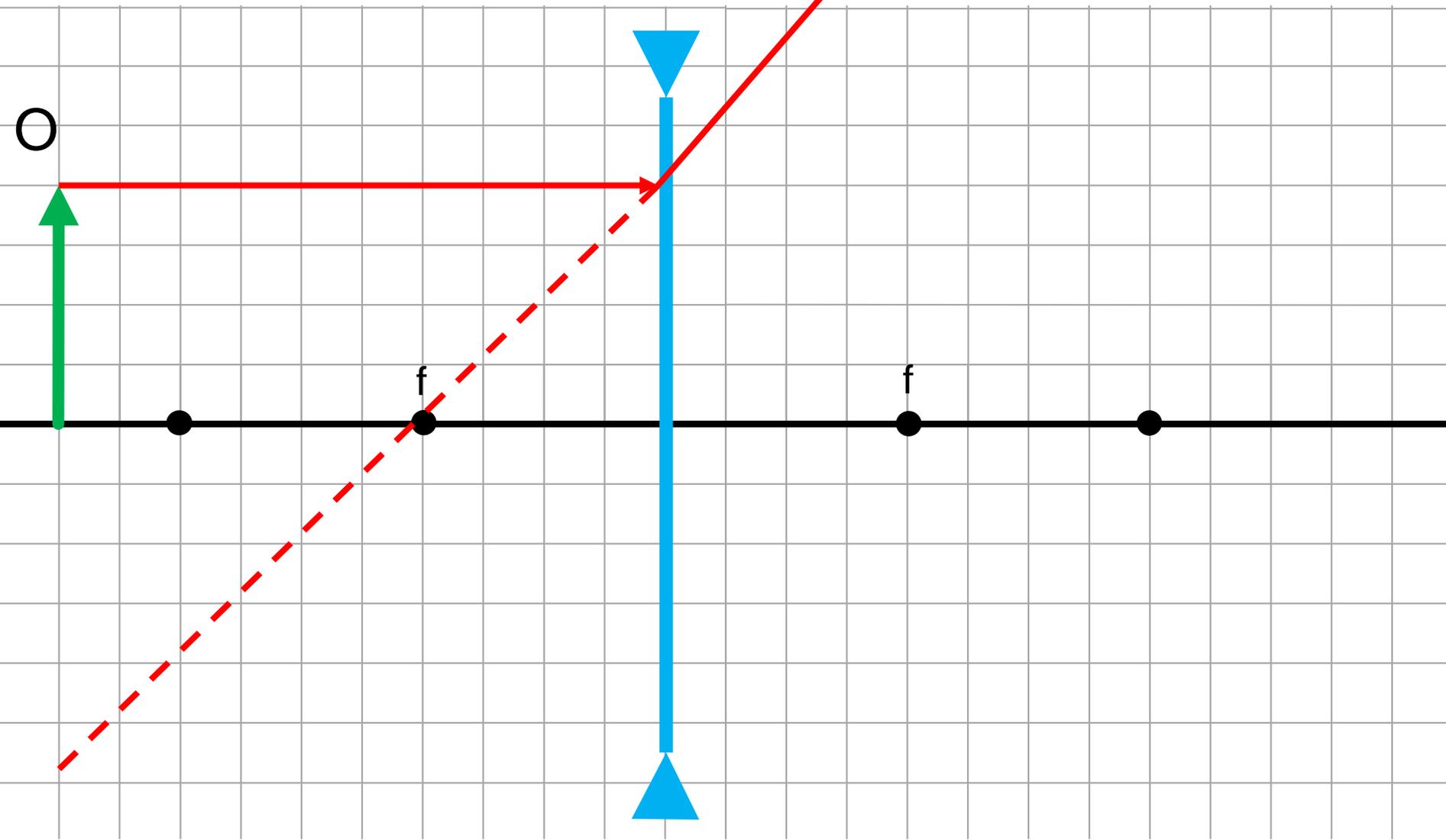


Figura 11: Objeto além do anti-principal

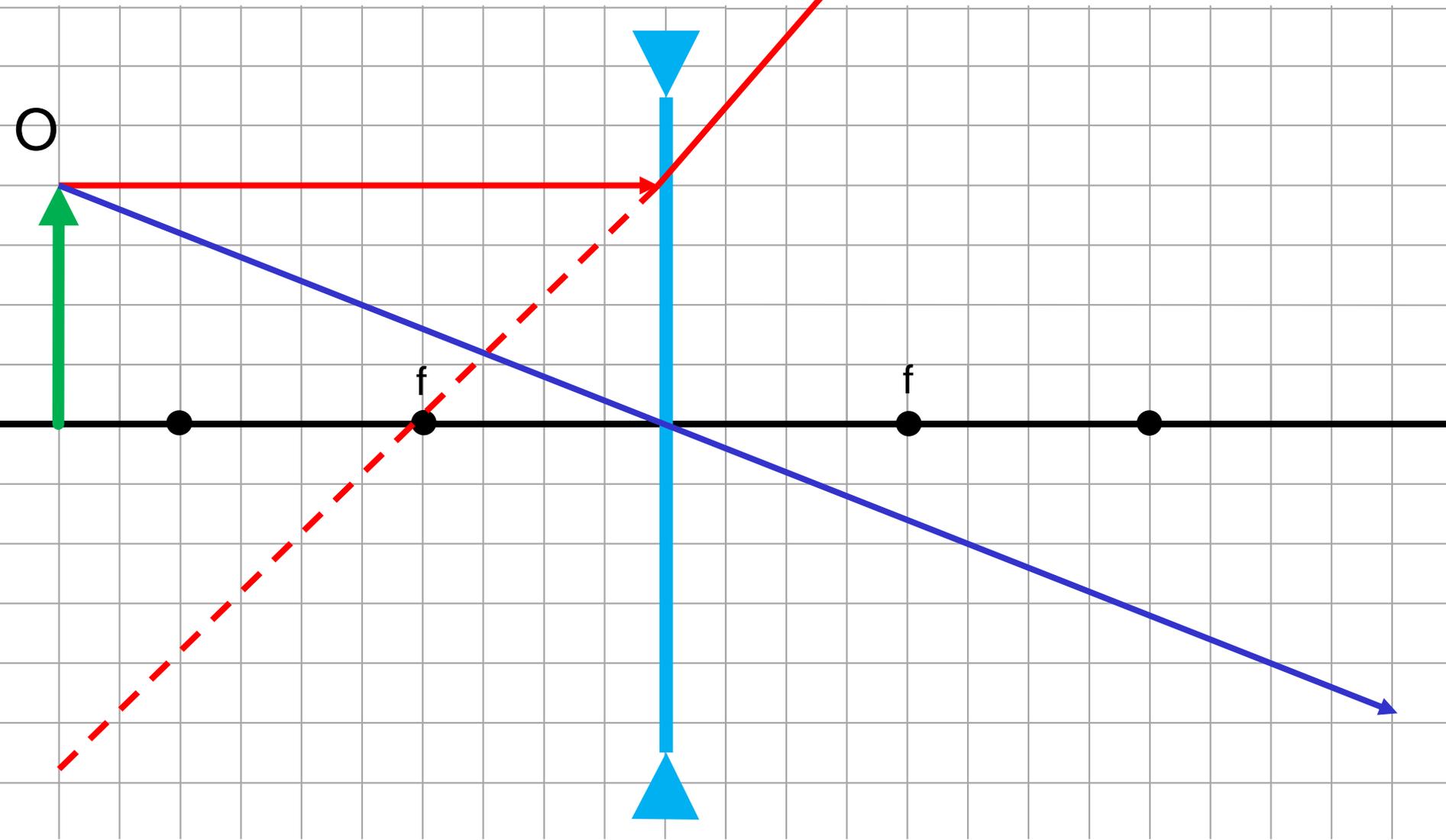


Figura 11: Objeto além do anti-principal

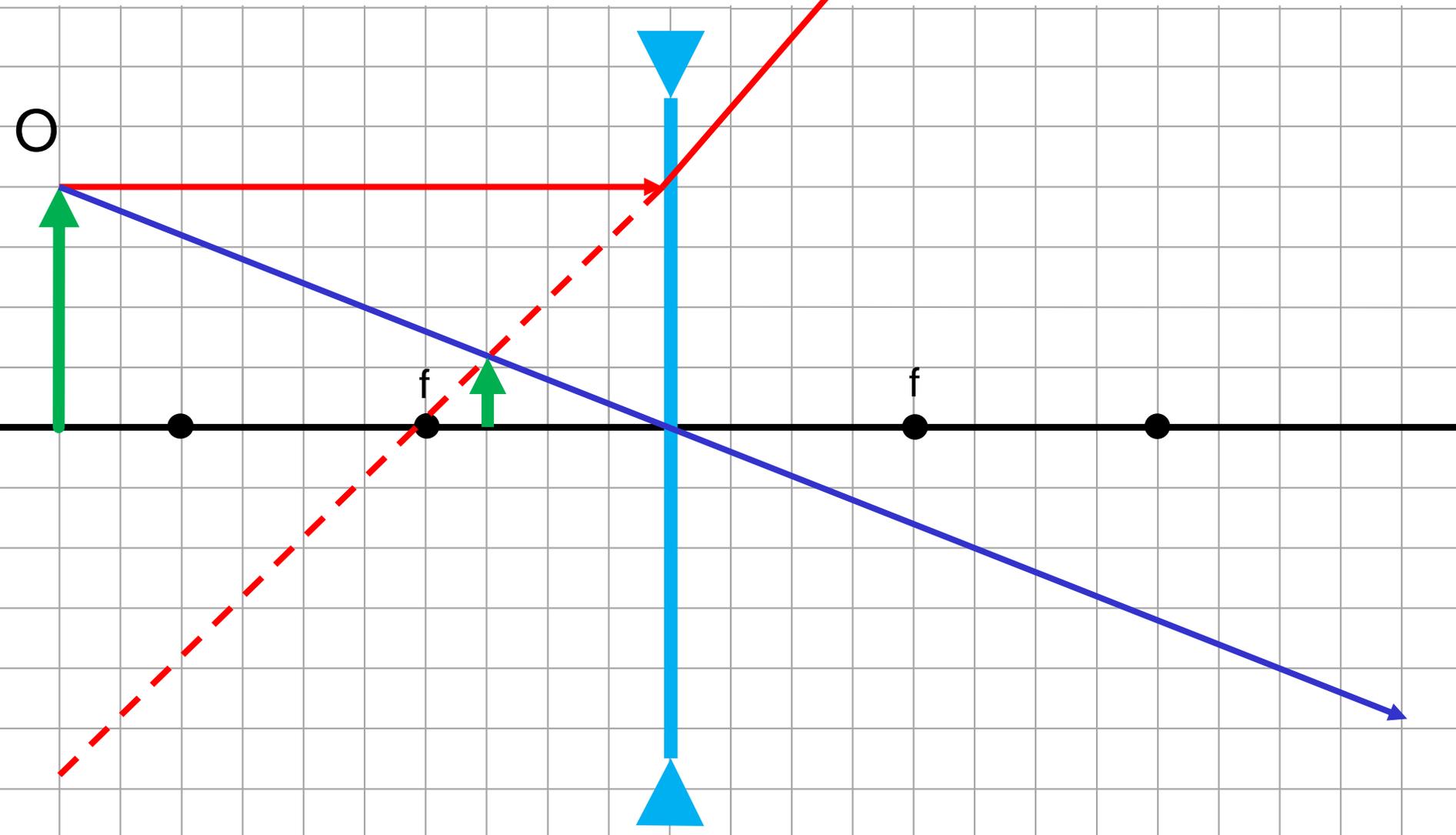


Figura 11: Objeto além do anti-principal

CLASSIFICAÇÃO:

Imagem

VIRTUAL

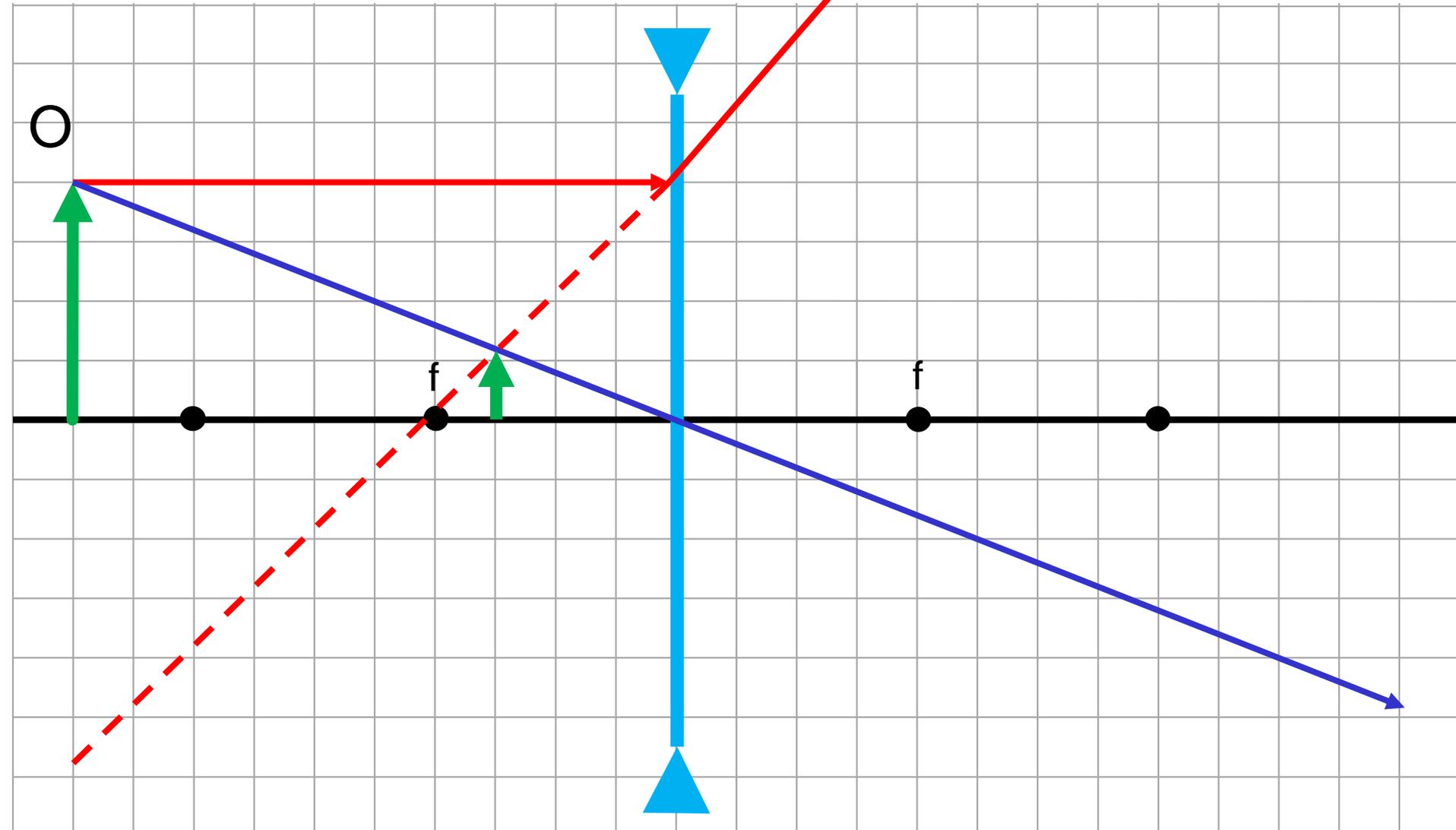


Figura 11: Objeto além do anti-principal

CLASSIFICAÇÃO:

Imagem

VIRTUAL  
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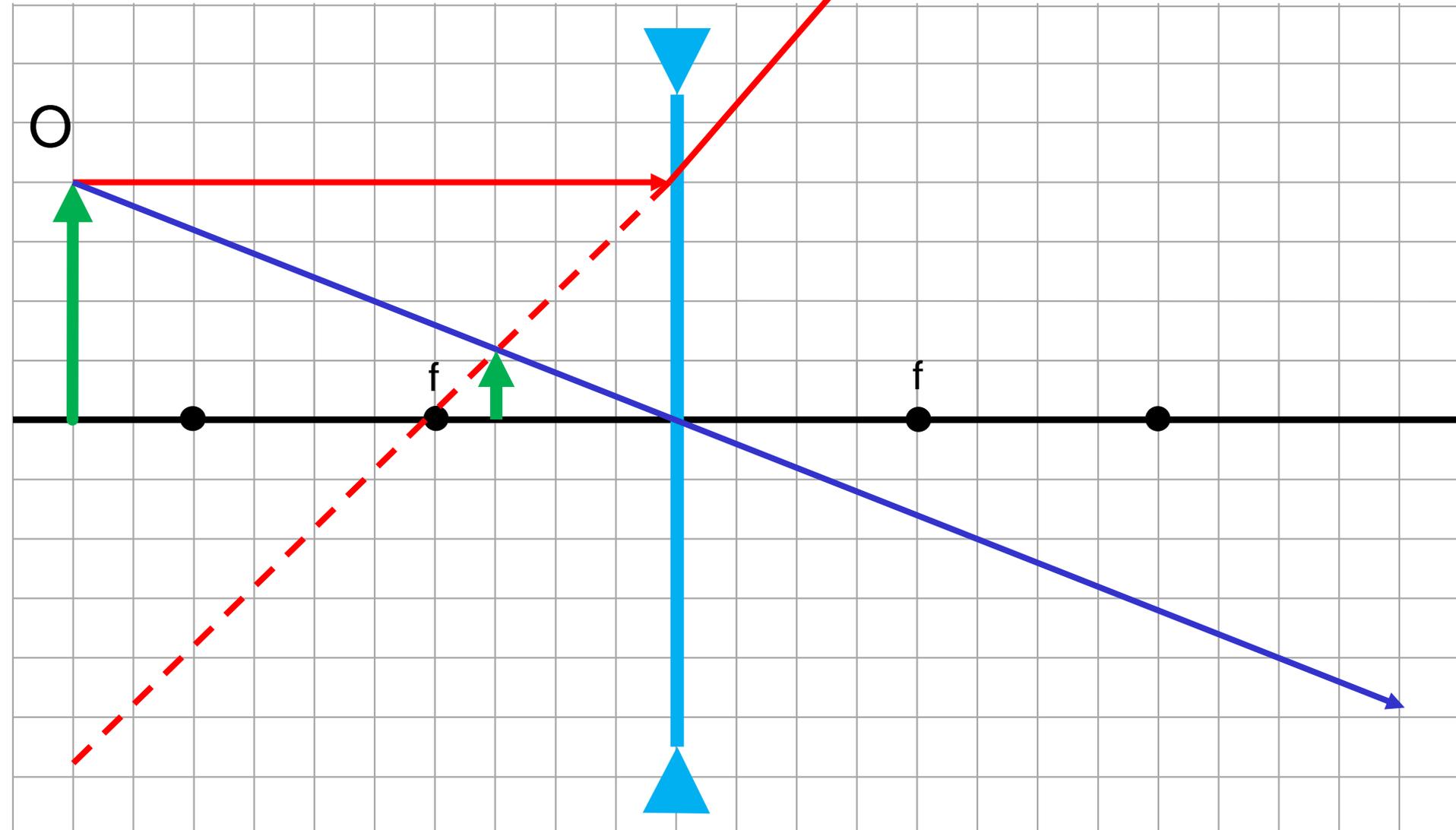


Figura 11: Objeto além do anti-principal

CLASSIFICAÇÃO:

Imagem

VIRTUAL  
DIREITA  
MENOR

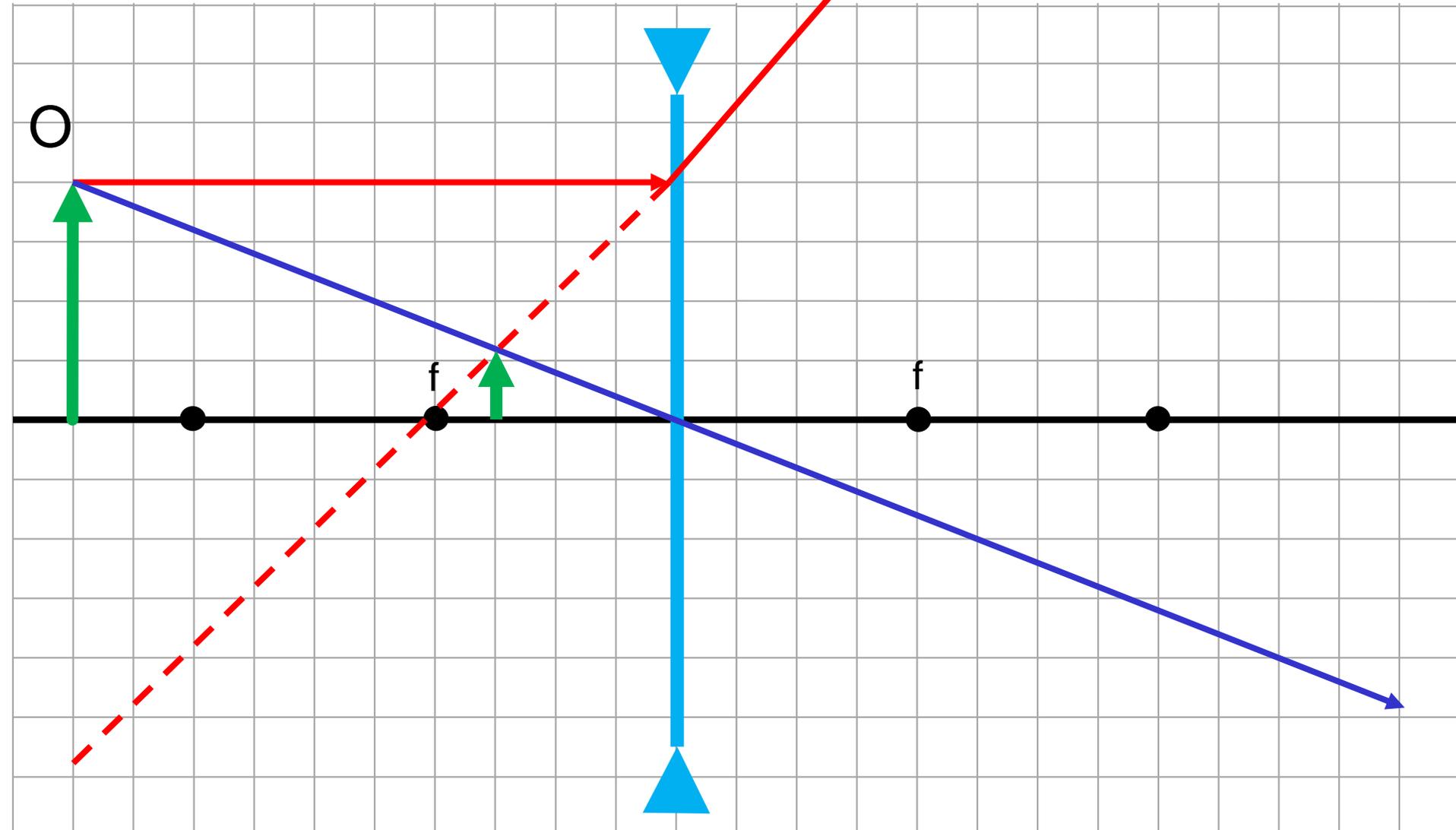
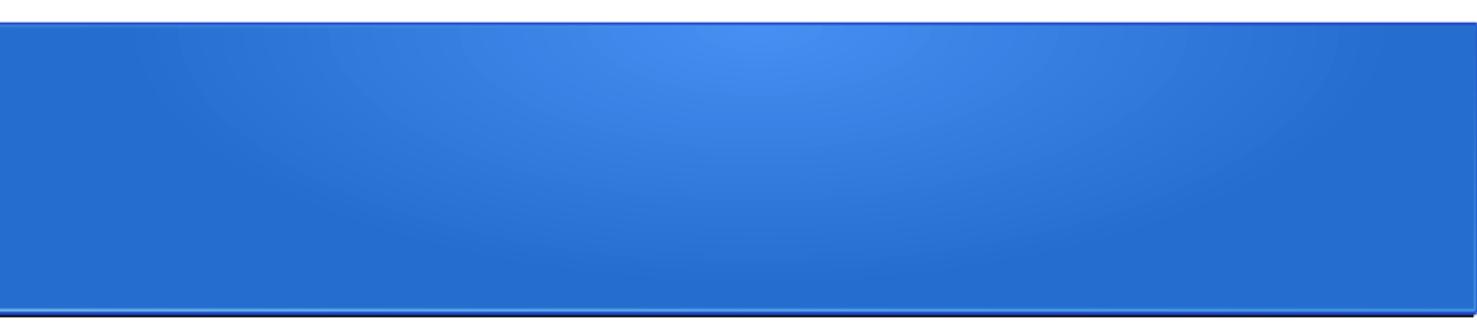


Figura 11: Objeto além do anti-principal



Sexto caso...

...e último!!!

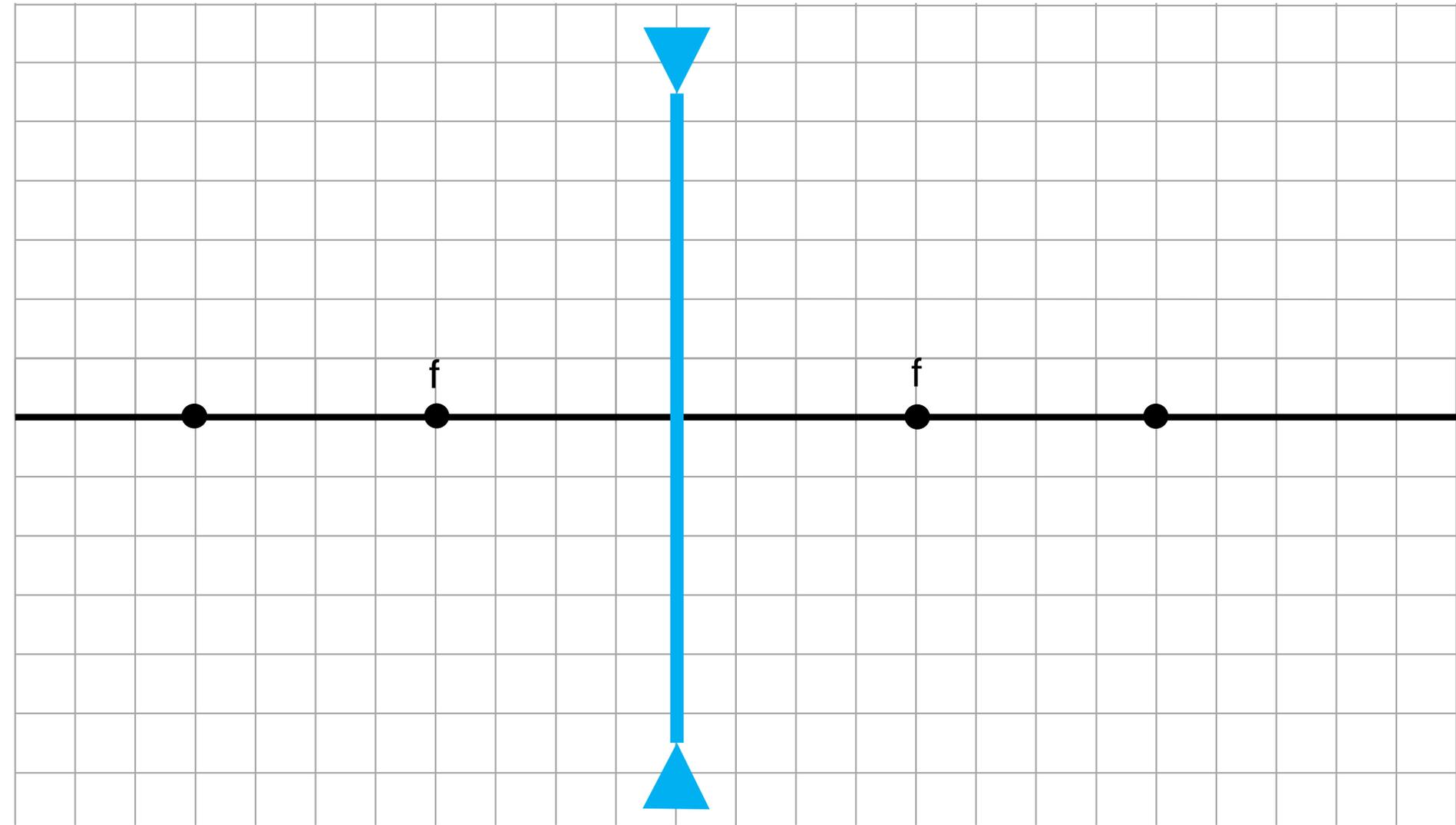


Figura 12: Objeto no “infinito”

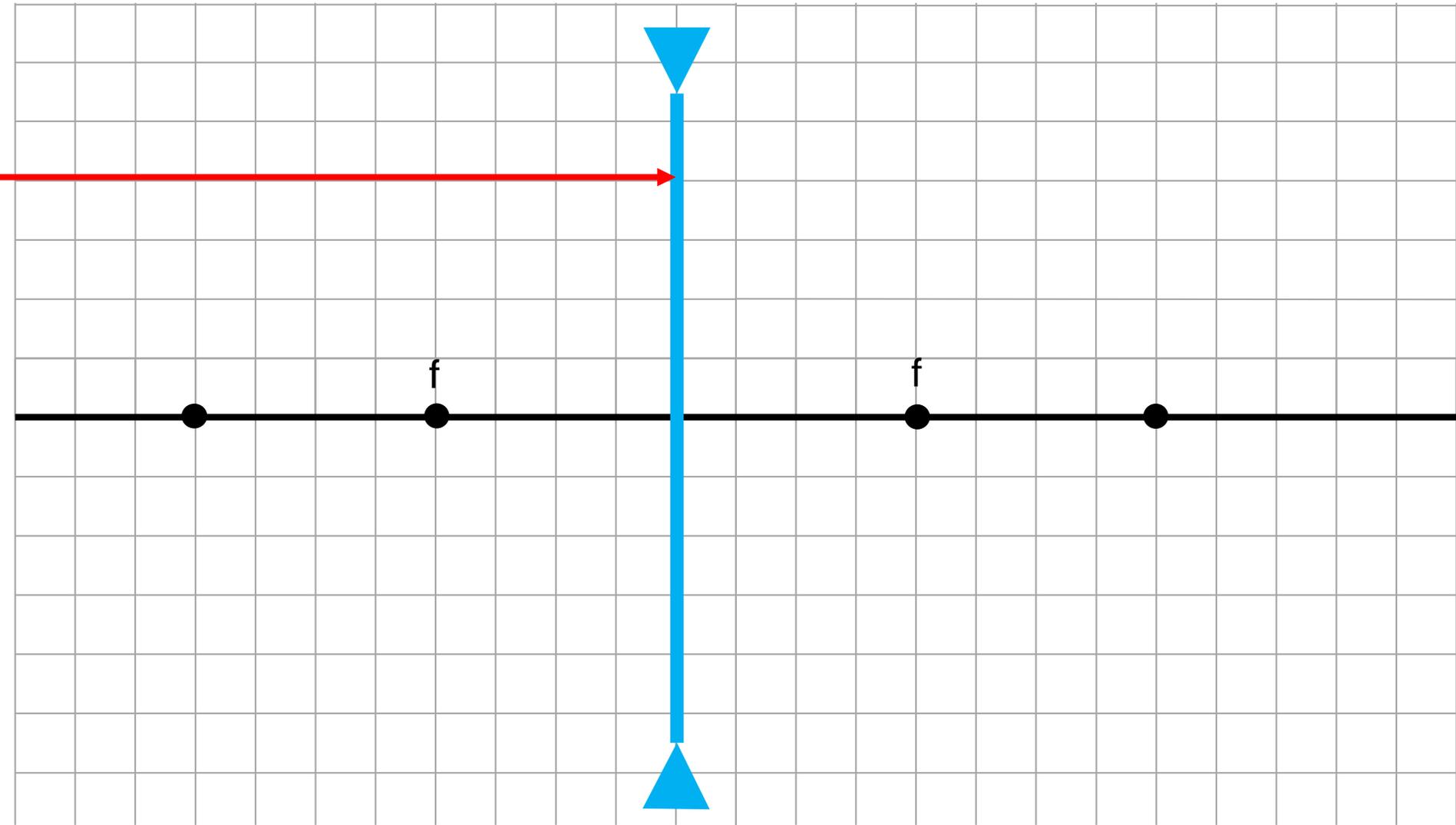


Figura 12: Objeto no “infinito”

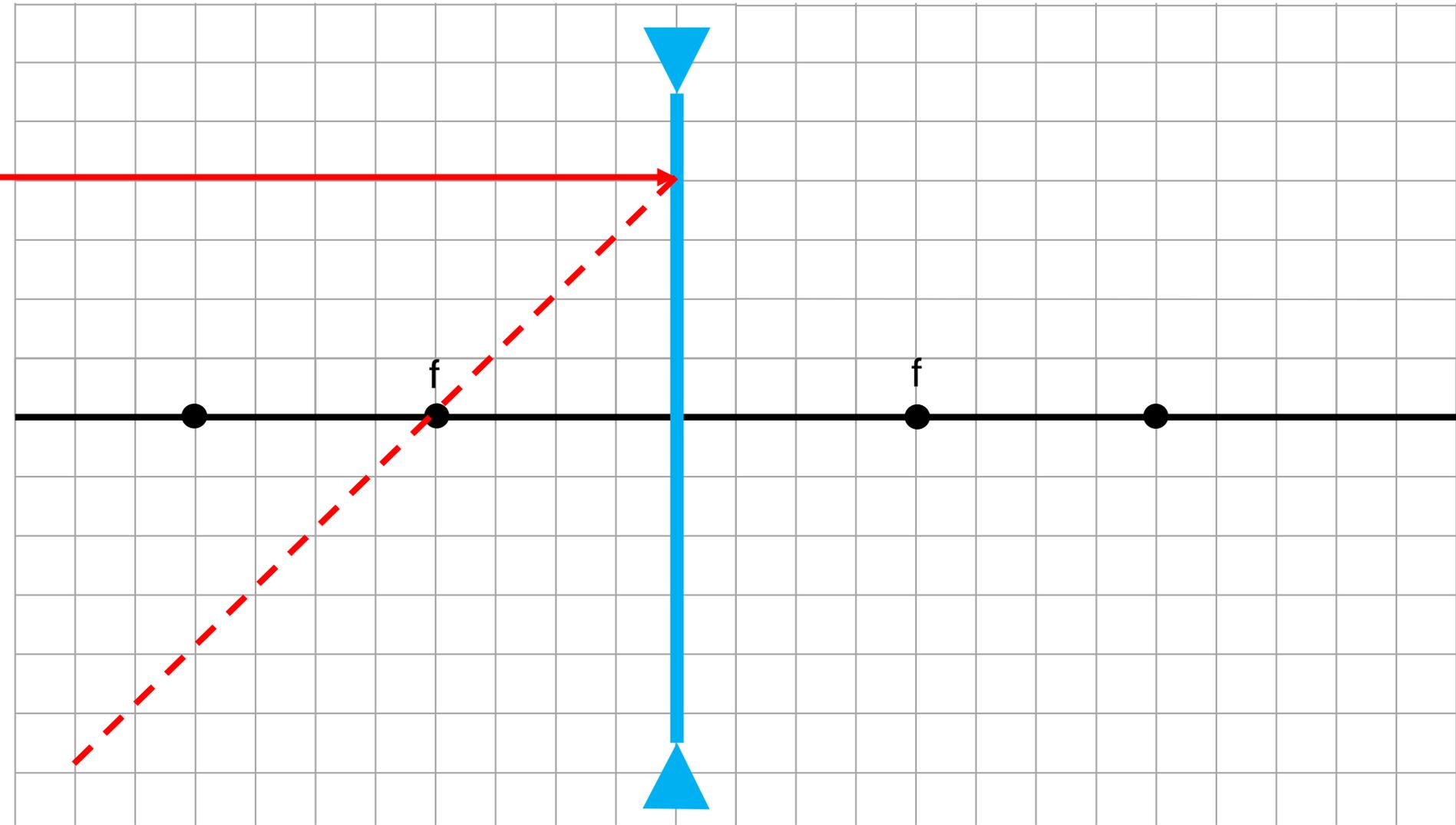


Figura 12: Objeto no “infinito”

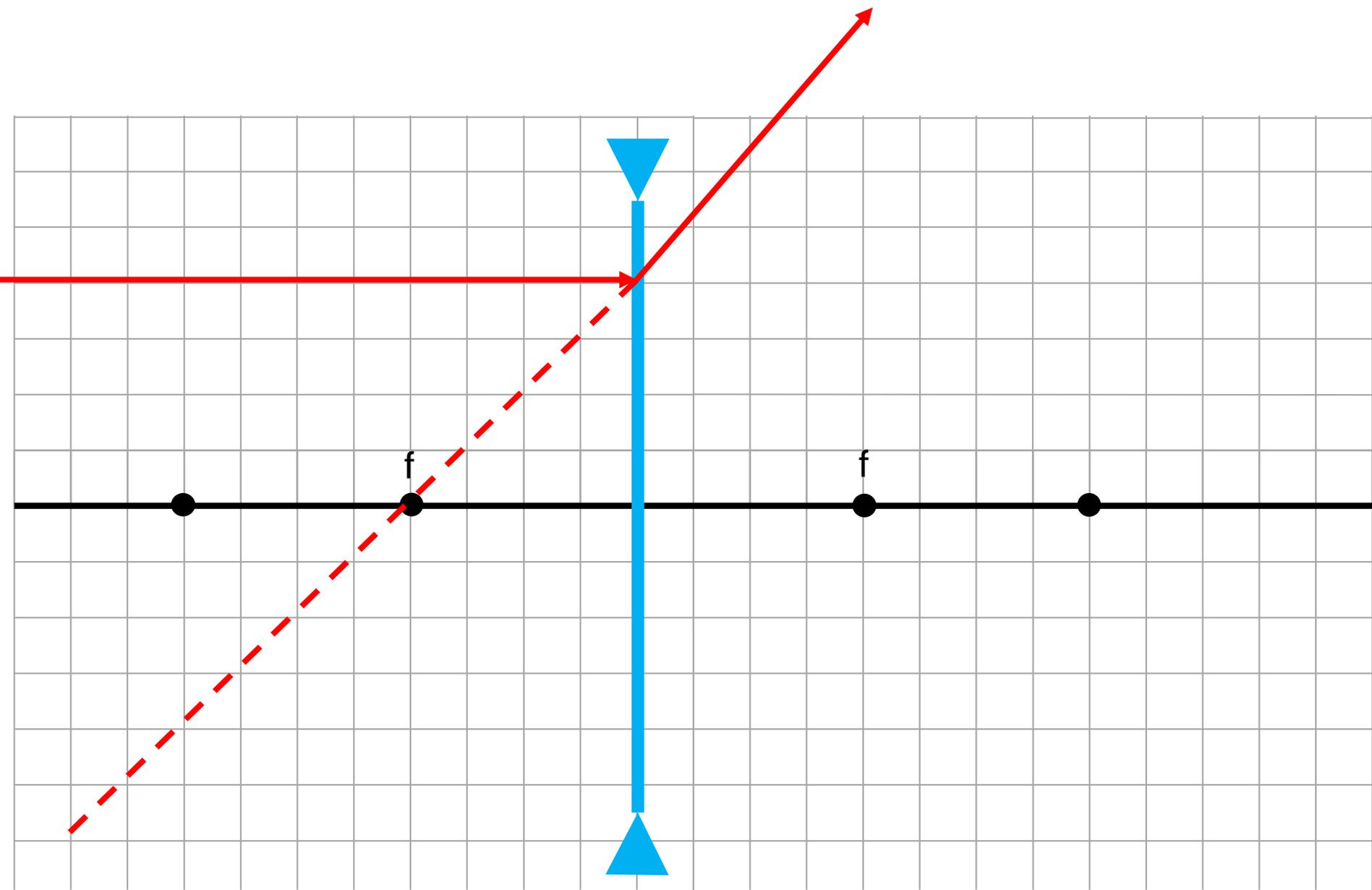


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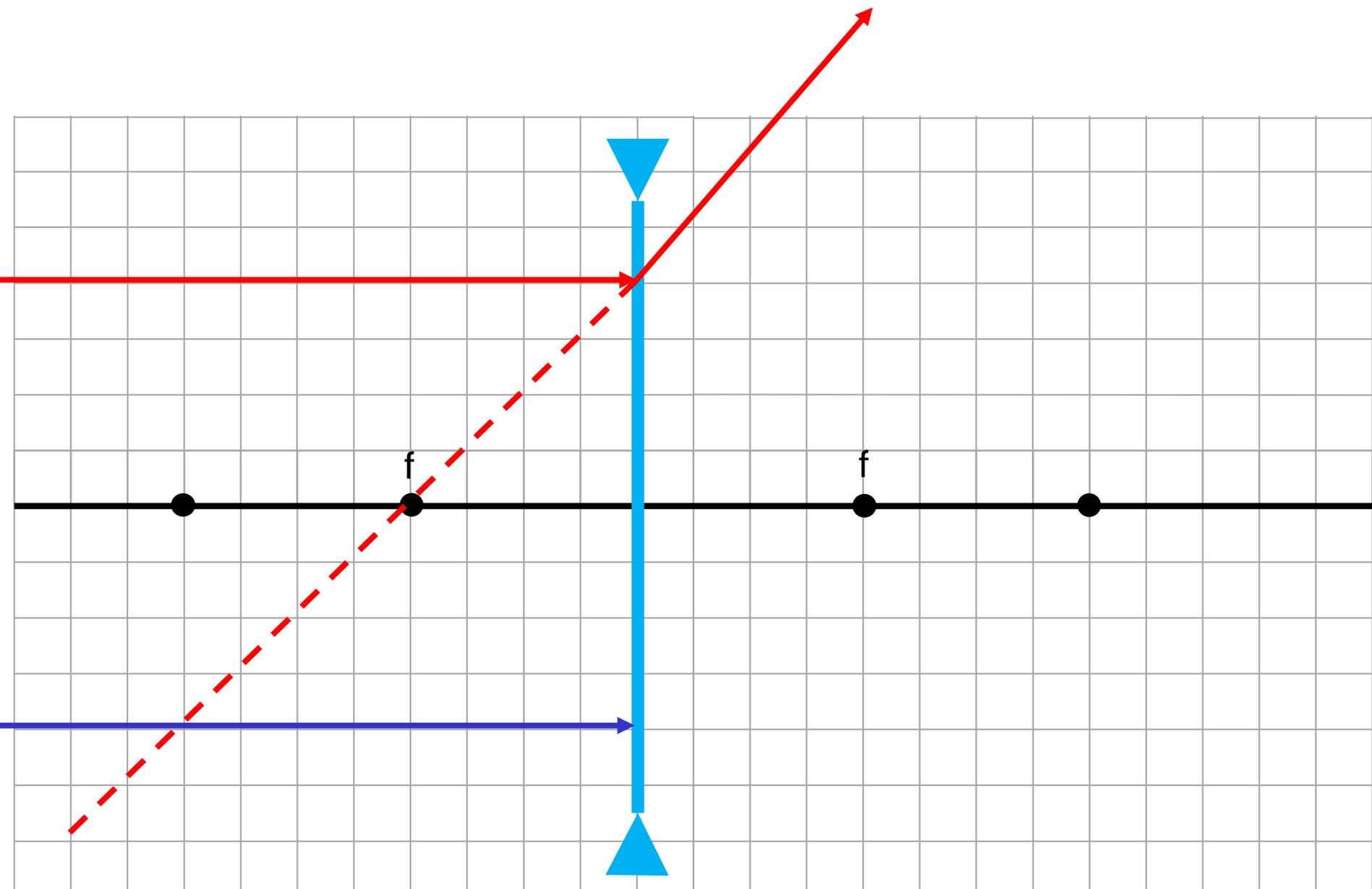


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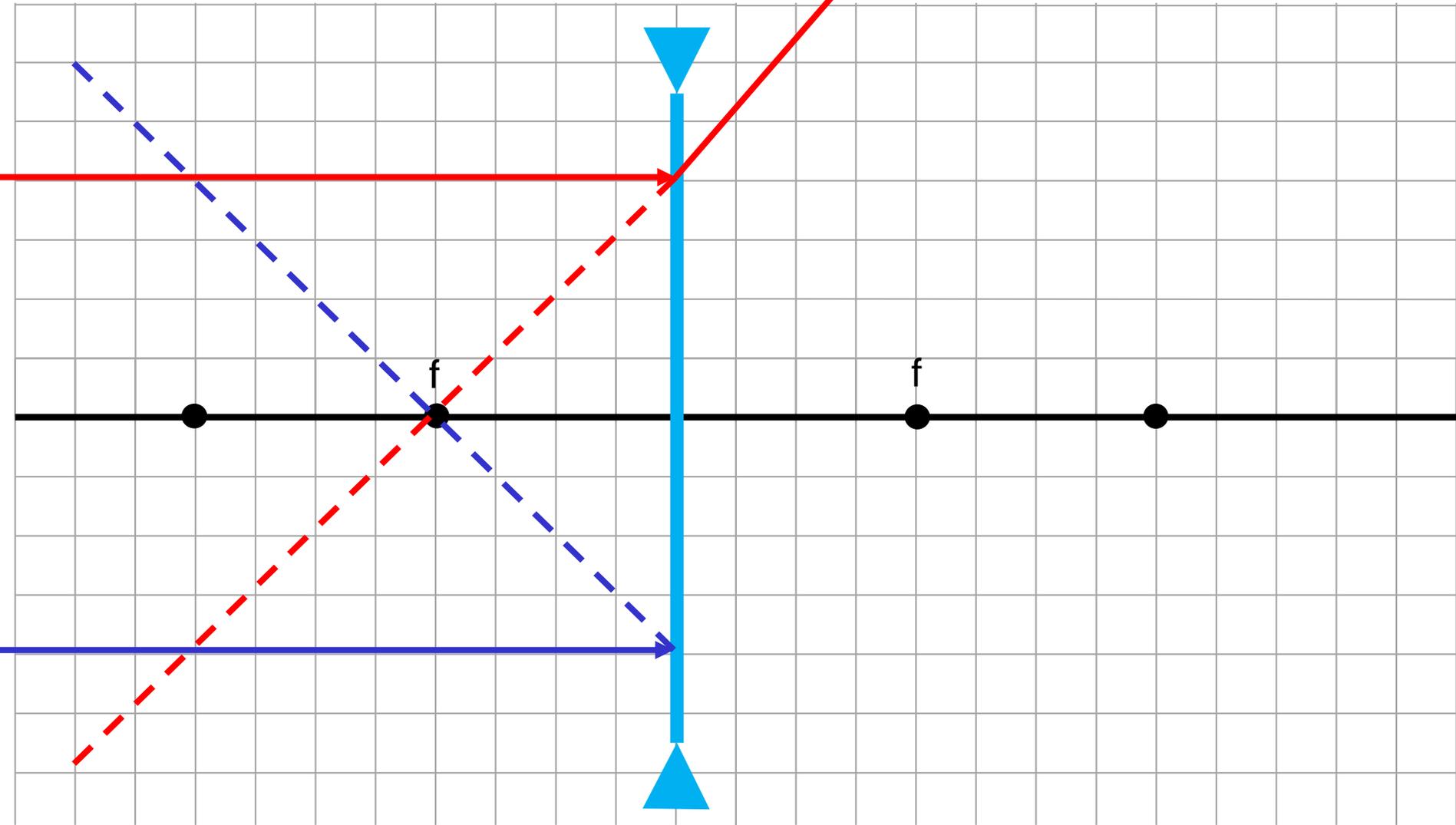


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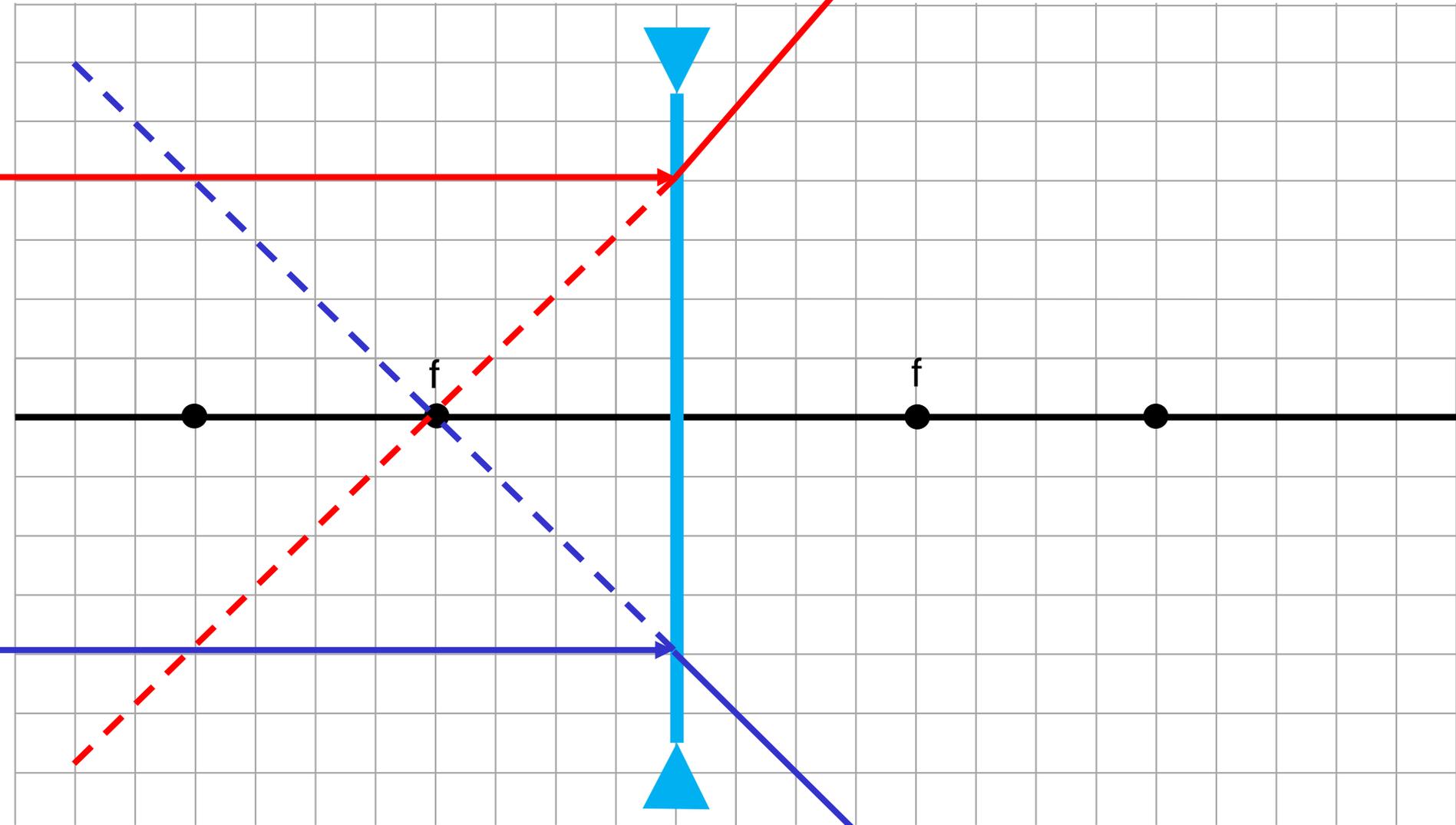


Figura 12: Objeto no "infinito"

CLASSIFICAÇÃO: Imagem

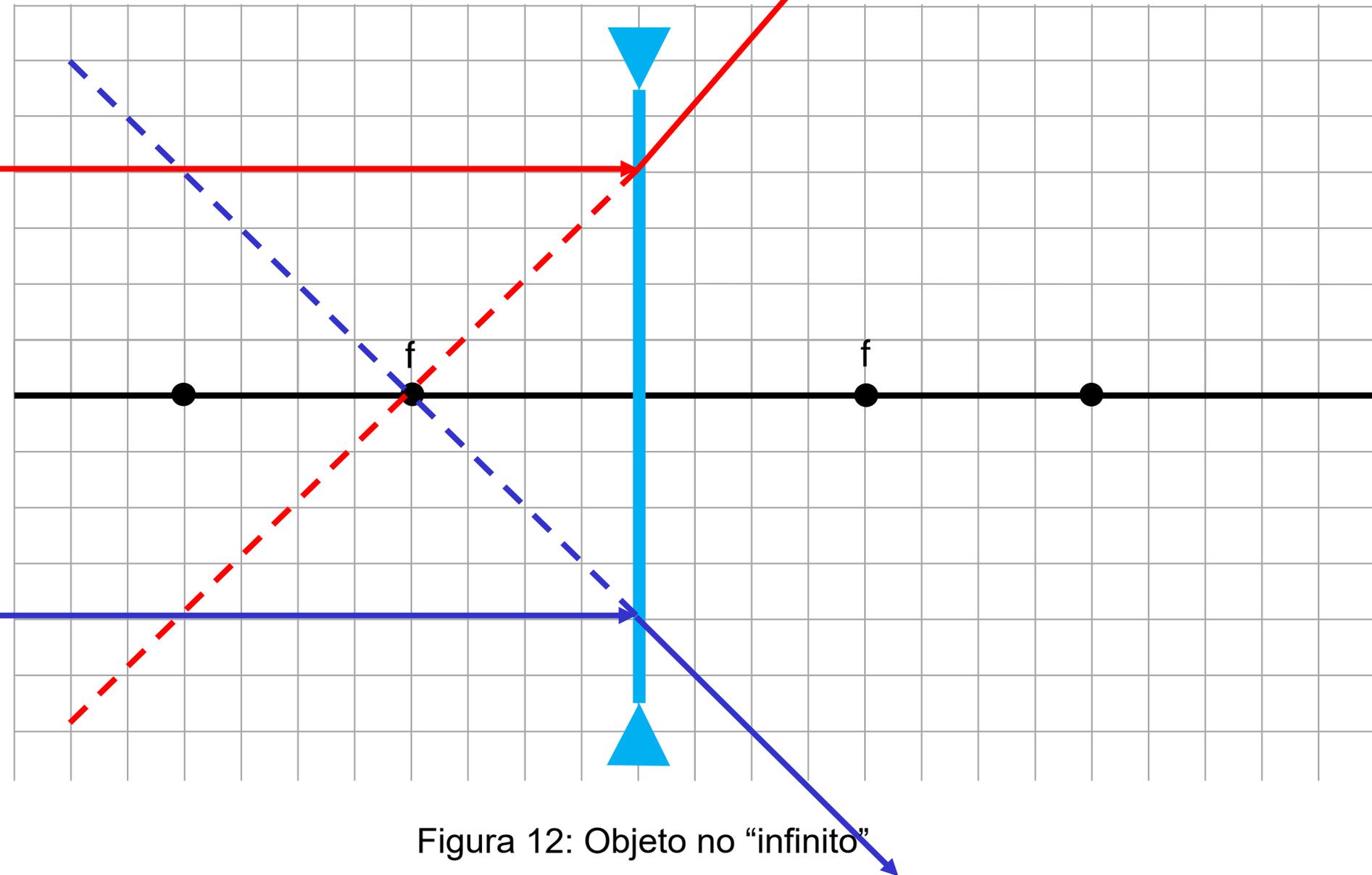


Figura 12: Objeto no "infinito"

CLASSIFICAÇÃO: Imagem PONTUAL E LOCALIZADA NO FOCO IMAGEM DALENTE

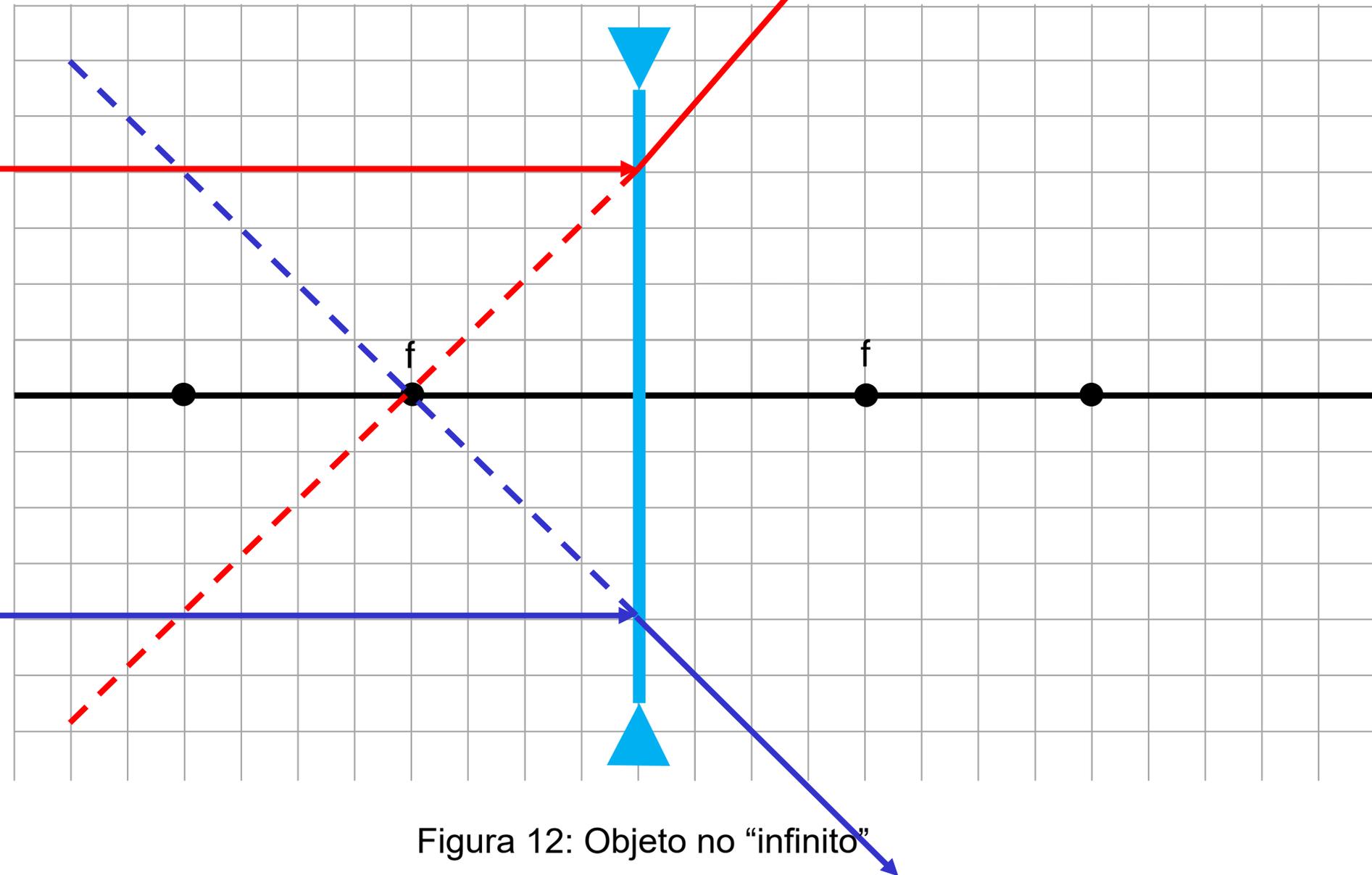


Figura 12: Objeto no "infinito"

VEJAMOS UMA ANIMAÇÃO  
PARA RESUMIR O QUE  
VIMOS NESTA AULA  
(CLIQUE AQUI)

# AVALIE ESTA AULA



<https://forms.gle/oaRnHxBHQUi3gHA57>