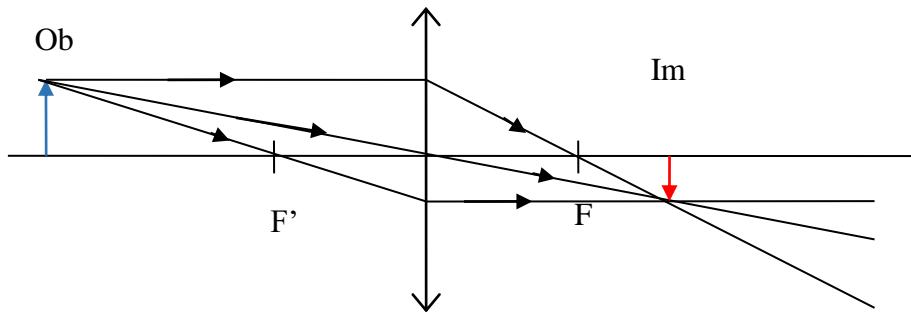


Diagramas de Raios de Lentes

Lente Convergente, $f > 0$

Objecto real, $p > f$

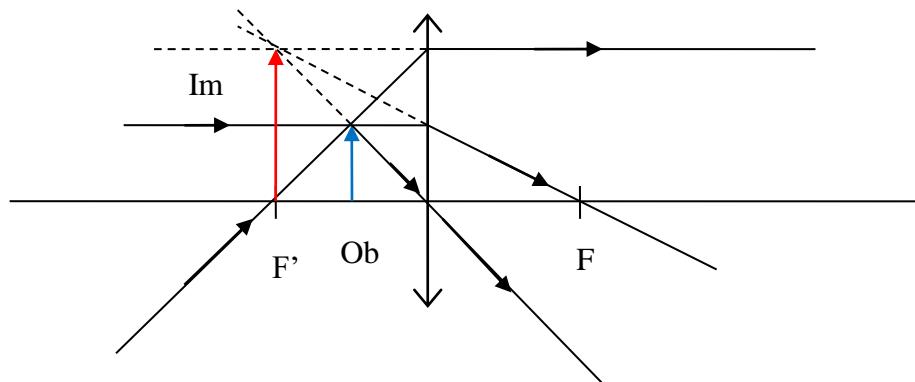
$1/q = 1/f - 1/p > 0$, Imagem real invertida



Lente Convergente, $f > 0$

Objecto real, $p < f$

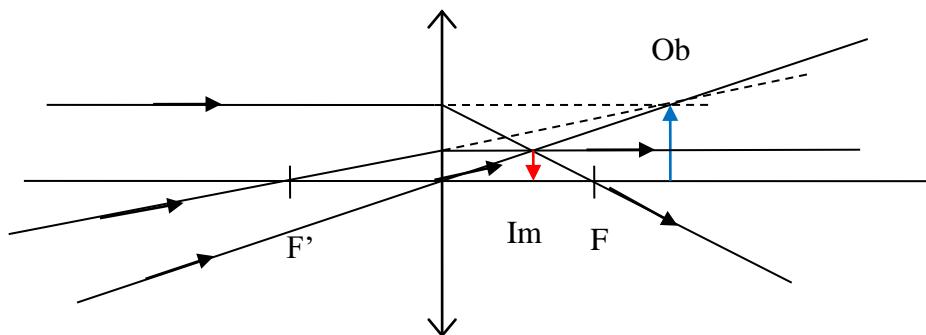
$1/q = 1/f - 1/p < 0$, Imagem virtual direita



Lente Convergente, $f > 0$

Objecto Virtual, $p < 0$

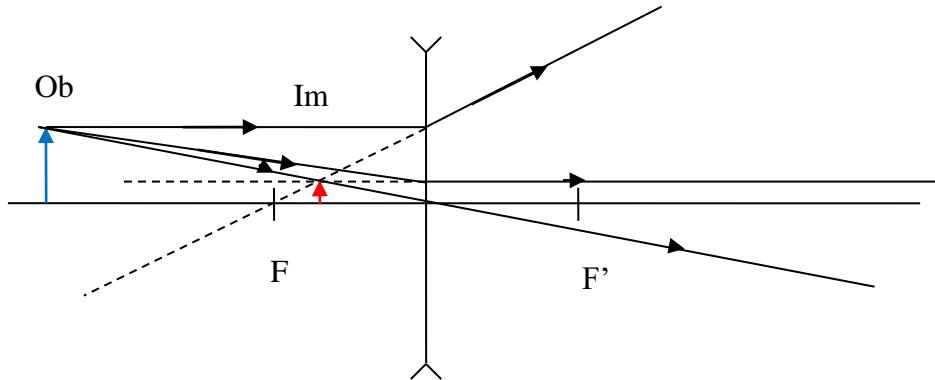
$1/q = 1/f - 1/p > 0$, Imagem real invertida



Lente Divergente, $f < 0$

Objecto real, $p > 0$

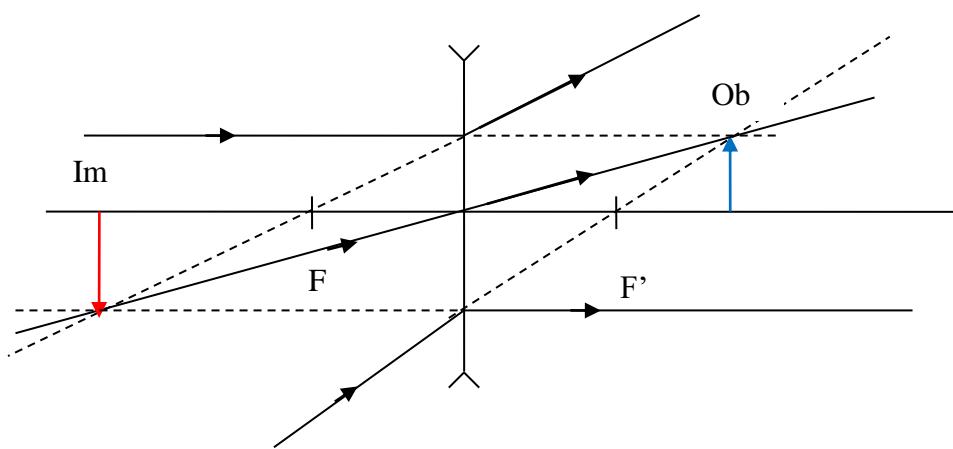
$1/q = 1/f - 1/p < 0$, Imagem virtual direita



Lente Divergente, $f < 0$

Objecto virtual, $p < 0$, $|p| > |f|$

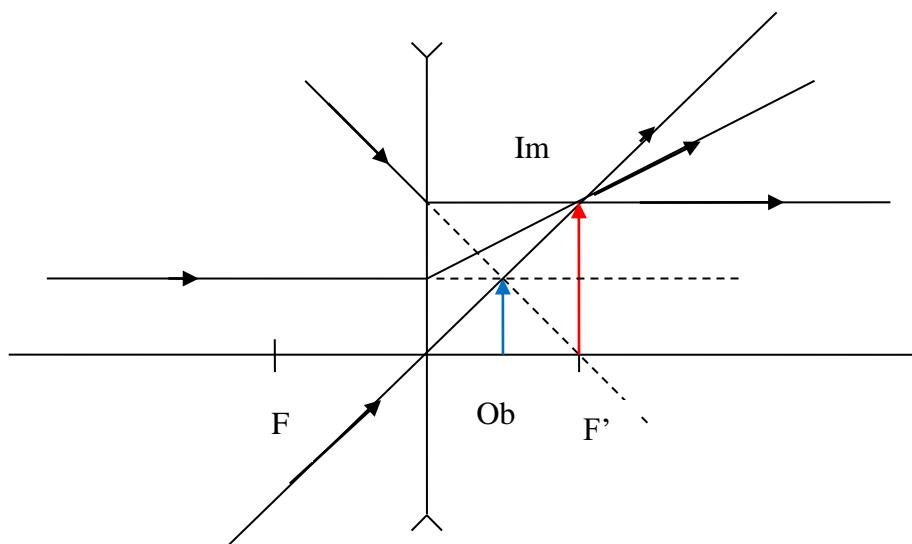
$1/q = 1/f - 1/p < 0$, Imagem virtual invertida



Lente Divergente, $f < 0$

Objecto virtual, $p < 0$, $|p| < |f|$

$1/q = 1/f - 1/p > 0$, Imagem real direita

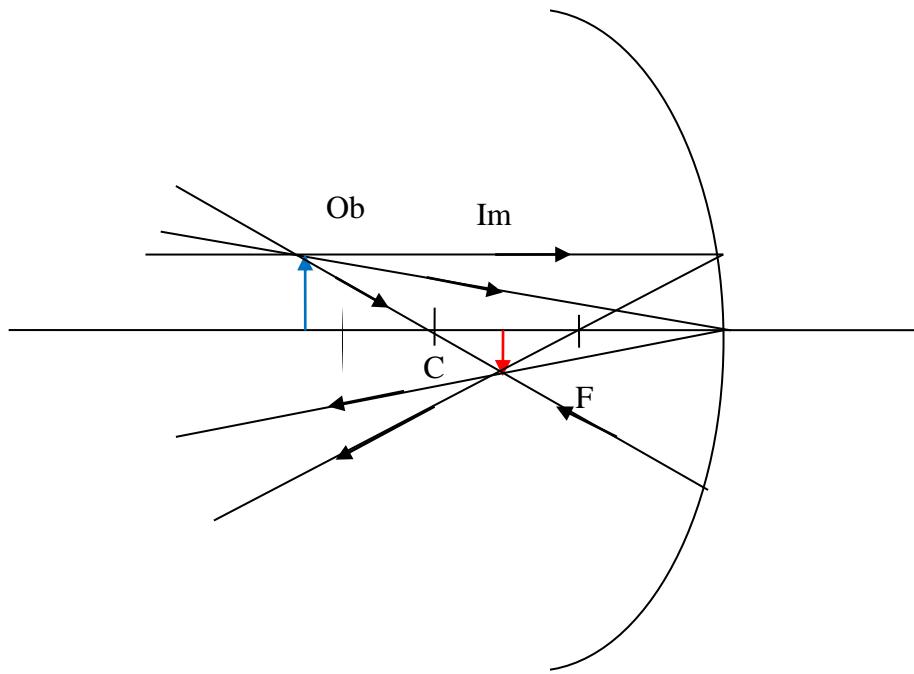


Diagramas de Raios de Espelhos Esféricicos

Espelho concavo, $f > 0$

Objecto Real, $p > 0$, $p > f$

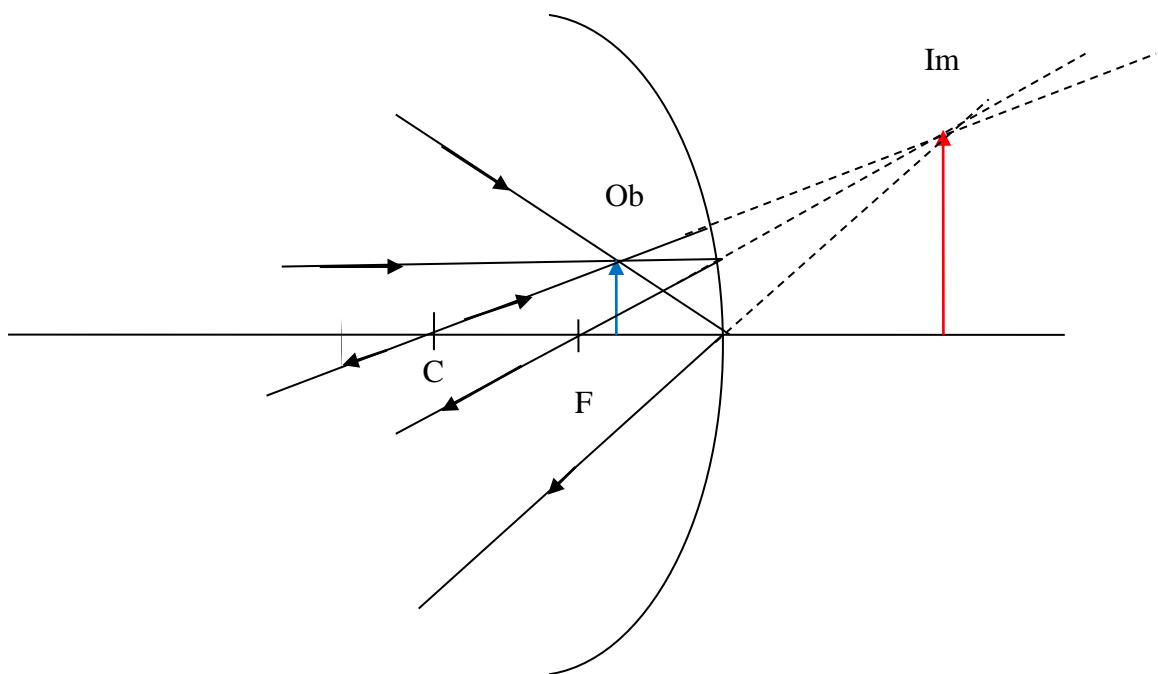
$$1/q = 1/f - 1/p > 0, \text{ Imagem real invertida}$$



Espelho concavo, $f > 0$

Objecto real, $p > 0$, $p < f$

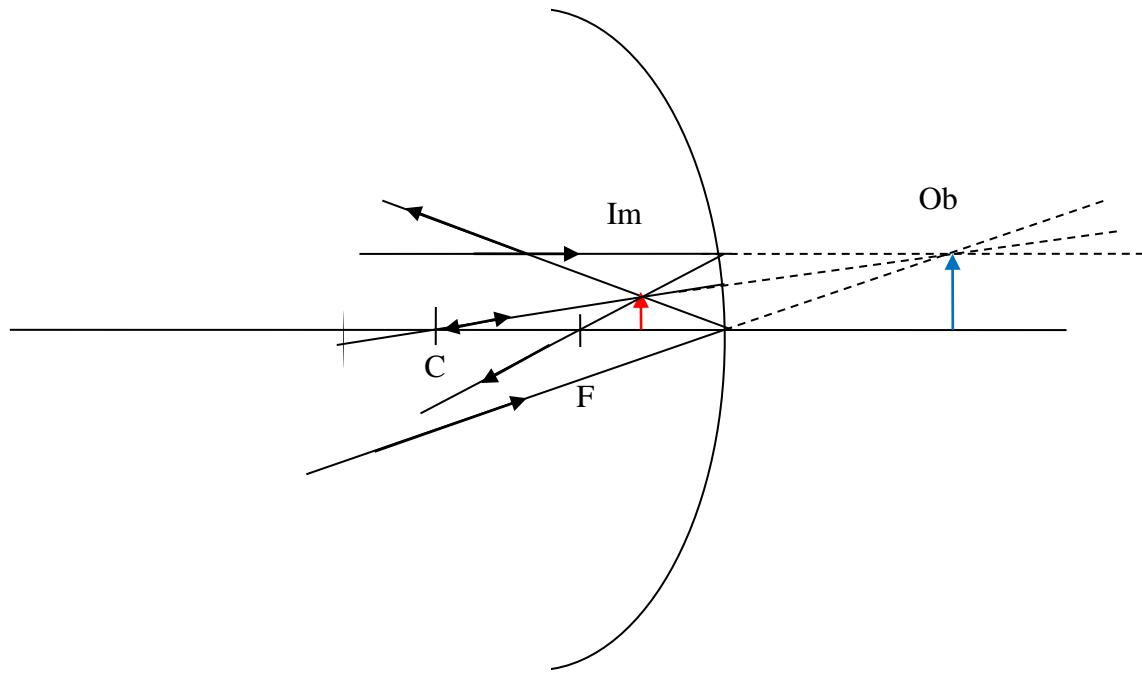
$$1/q = 1/f - 1/p < 0, \text{ Imagem virtual direita}$$



Espelho concavo, $f>0$

Objecto Virtual, $p<0, p < f$

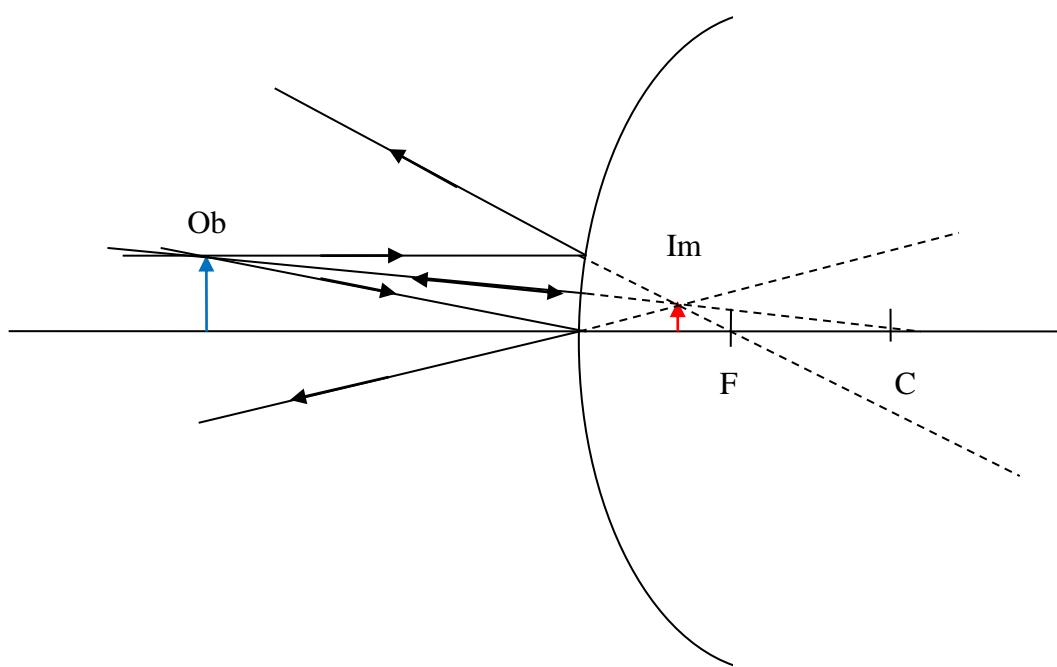
$1/q=1/f-1/p > 0$, Imagem real direita



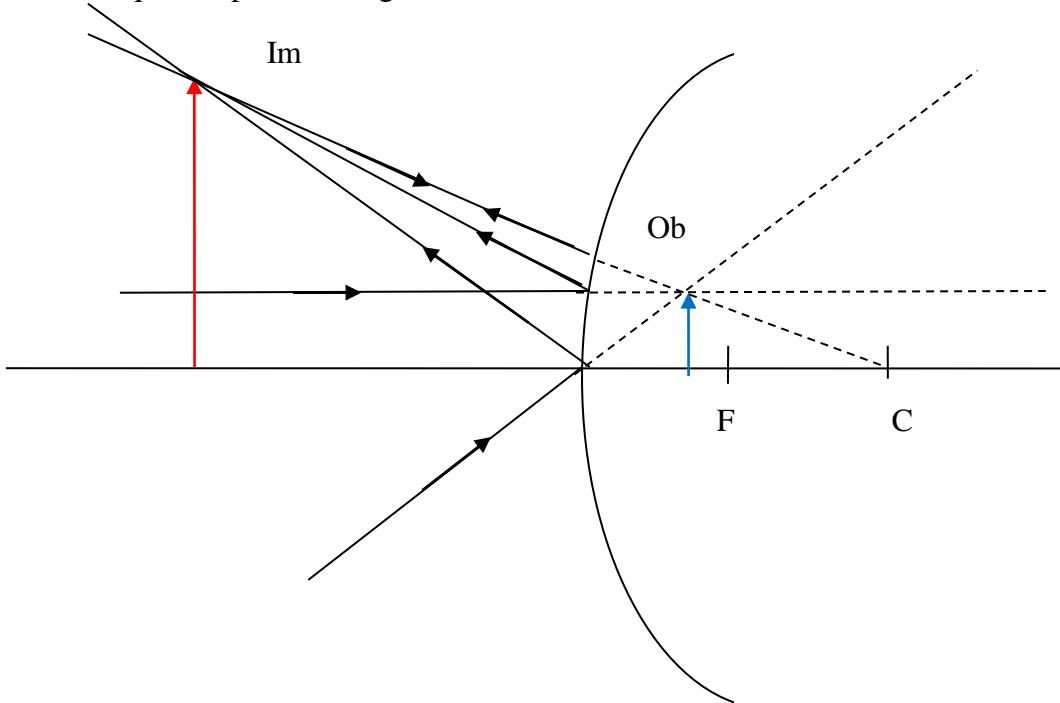
Espelho convexo, $f<0$

Objecto real, $p>0$,

$1/q=1/f-1/p < 0$, Imagem virtual direita



Espelho convexo, $f < 0$
Objecto virtual, $p < 0, |p| < |f|$
 $1/q = 1/f - 1/p > 0$, Imagem real direita



Espelho convexo, $f < 0$
Objecto virtual, $p < 0, |p| > |f|$
 $1/q = 1/f - 1/p < 0$, Imagem virtual invertida

