

LESSON 130

1. Reflect over the x -axis. 2. Stretch vertically by 2.
Shift up 3 units. Shift right 1 unit.

3. Vertical asymptote: $x = 0$
Horizontal asymptote: $y = 0$

4. $y = \frac{1}{x}$ Parent function

$y = \frac{4}{x}$ Stretch vertically by 4.

$f(x) = \frac{4}{x+3}$ Shift left 3 units.

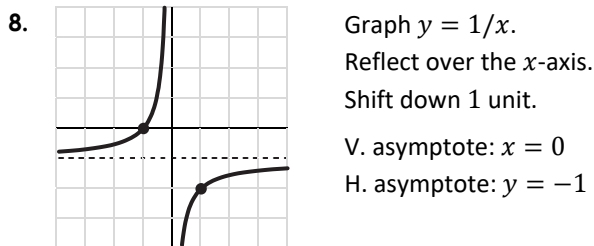
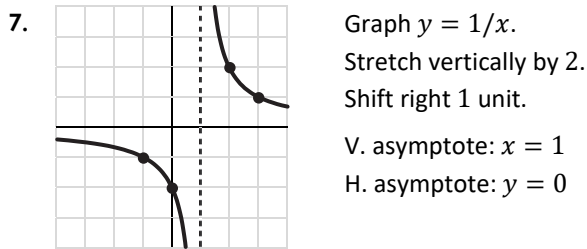
5. $y = \frac{1}{x}$ Parent function

$y = -\frac{1}{x}$ Reflect over the x -axis.

$y = -\frac{1}{x-2}$ Shift right 2 units.

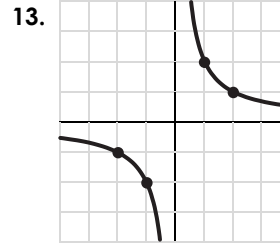
$f(x) = -\frac{1}{x-2} + 5$ Shift up 5 units.

6. Vertical asymptote: $x = 2$
Horizontal asymptote: $y = 5$

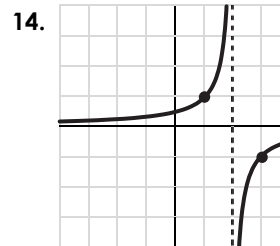


9. Shift right 3 units. 10. Shift left 4 units.
Shift down 3 units.

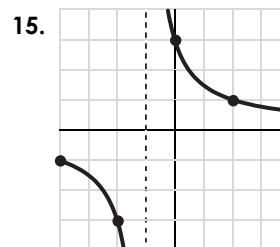
11. Stretch vertically by 2.
Reflect over the x -axis.
Shift left 5 units. 12. Stretch vertically by 3.
Shift right 2 units.
Shift up 7 units.



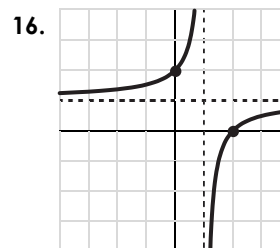
Graph $y = 1/x$.
Stretch vertically by 2.
V. asymptote: $x = 0$
H. asymptote: $y = 0$
Domain: $x \neq 0$
Range: $y \neq 0$



Graph $y = 1/x$.
Reflect over the x -axis.
Shift right 2 units.
V. asymptote: $x = 2$
H. asymptote: $y = 0$
Domain: $x \neq 2$
Range: $y \neq 0$



Graph $y = 1/x$.
Stretch vertically by 3.
Shift left 1 unit.
V. asymptote: $x = -1$
H. asymptote: $y = 0$
Domain: $x \neq -1$
Range: $y \neq 0$



Graph $y = 1/x$.
Reflect over the x -axis.
Shift right 1 unit.
Shift up 1 unit.
V. asymptote: $x = 1$
H. asymptote: $y = 1$
Domain: $x \neq 1$
Range: $y \neq 1$

17. $f(x) = \frac{a}{x-3} + 2$

Plug in $h = 3$ and $k = 2$.

$0 = \frac{a}{2-3} + 2$

Plug in $(2, 0)$.

$a = 2$

Solve for a .

$f(x) = \frac{2}{x-3} + 2$

Write the function.

18. $f(x) = \frac{a}{x+2} + 1$

Plug in $h = -2$ and $k = 1$.

$-1 = \frac{a}{1+2} + 1$

Plug in $(1, -1)$.

$a = -6$

Solve for a .

$f(x) = -\frac{6}{x+2} + 1$

Write the function.