

Funções Homógrafas (Racionais)

1. Encontre as intersecções com os eixos x e y e o domínio da função racional.

(a) $r(x) = \frac{x-1}{x+4}$

(b) $s(x) = \frac{3x}{x-5}$

(c) $t(x) = \frac{x^2-x-2}{x-6}$

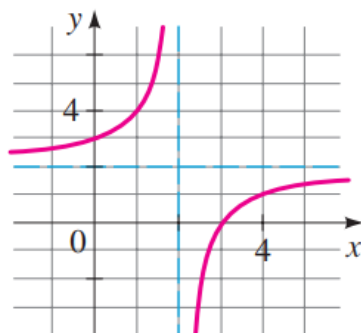
(d) $r(x) = \frac{2}{x^2+3x-4}$

(e) $r(x) = \frac{x^2-9}{x^2}$

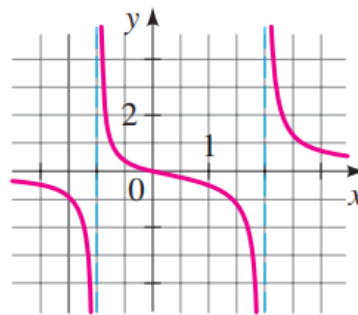
(f) $r(x) = \frac{x^3+8}{x^2+4}$

2. A partir do gráfico, determine as intersecções com os eixos x e y , assim como as assíntotas verticais e horizontais.

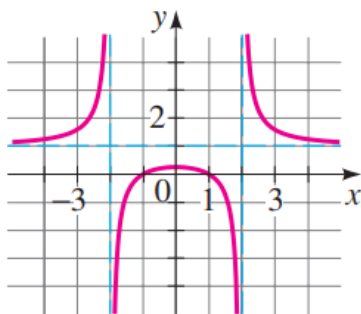
11.



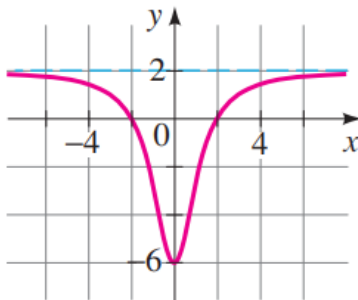
12.



13.



14.



3. Encontre todas as assíntotas horizontais e verticais (se houver) e depois faça um esboço do gráfico da função racional.

(a) $t(x) = \frac{2x - 3}{x - 2}$

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

(c) $r(x) = \frac{x + 2}{x + 3}$

(d) $r(x) = \frac{2x - 9}{x - 4}$

(e) $r(x) = \frac{4x - 4}{x + 2}$

(f) $r(x) = \frac{2x + 6}{-6x + 3}$

(g) $s(x) = \frac{4 - 3x}{x + 7}$

(h) $s(x) = \frac{1 - 2x}{2x + 3}$

4. Utilize transformações do gráfico de $f(x) = \frac{1}{x}$ para traçar o gráfico das funções:

(a) $t(x) = \frac{1}{x - 1}$

(b) $t(x) = \frac{3}{x + 3}$

(c) $t(x) = \frac{1}{x + 4}$

(d) $t(x) = \frac{-2}{x - 2}$

(e) $t(x) = \frac{2x - 3}{x - 2}$

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

(g) $r(x) = \frac{x + 2}{x + 3}$

(h) $r(x) = \frac{2x - 9}{x - 4}$

5. Encontre as intersecções com os eixos x e y e as assíntotas, e depois faça um esboço do gráfico da função racional.

(a) $r(x) = \frac{18}{(x - 3)^2}$

$$\begin{aligned} \text{(b)} \quad r(x) &= \frac{x-2}{(x+1)^2} \\ \text{(c)} \quad s(x) &= \frac{4x-8}{(x-4)(x+1)} \\ \text{(d)} \quad s(x) &= \frac{x+2}{(x+3)(x-1)} \\ \text{(e)} \quad s(x) &= \frac{6}{x^2-5x-6} \\ \text{(f)} \quad s(x) &= \frac{2x-4}{x^2+x-2} \\ \text{(g)} \quad r(x) &= \frac{3x+6}{x^2+2x-8} \\ \text{(h)} \quad t(x) &= \frac{x-2}{x^2-4x} \\ \text{(i)} \quad r(x) &= \frac{(x-1)(x+2)}{(x+1)(x-3)} \\ \text{(j)} \quad r(x) &= \frac{2x(x+2)}{(x-1)(x-4)} \\ \text{(k)} \quad r(x) &= \frac{x^2-2x+1}{x^2+2x+1} \end{aligned}$$

6. Encontre a assíntota oblíqua, as assíntotas verticais e esboce o gráfico da função.

$$\begin{aligned} \text{(a)} \quad r(x) &= \frac{x^2}{x-2} \\ \text{(b)} \quad r(x) &= \frac{x^2+2x}{x-1} \\ \text{(c)} \quad r(x) &= \frac{x^2-2x-8}{x} \\ \text{(d)} \quad r(x) &= \frac{3x-x^2}{2x-2} \\ \text{(e)} \quad r(x) &= \frac{1}{x-1} \\ \text{(f)} \quad r(x) &= \frac{1}{x+4} \\ \text{(g)} \quad r(x) &= \frac{x^2+5x+4}{x-3} \\ \text{(h)} \quad r(x) &= \frac{x^3+4}{2x^2+x-1} \end{aligned}$$