

Find the domain, range, vertical & horizontal asymptotes, and x & y intercepts for the following rational functions. Graph.

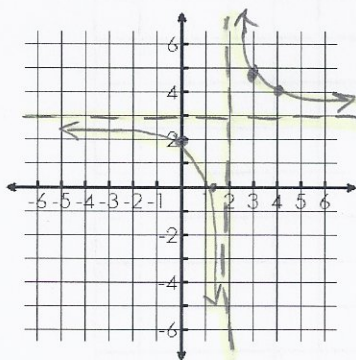
$$1. f(x) = \frac{3x-4}{x-2}$$

Domain: $(-\infty, 2) \cup (2, \infty)$ Range: $(-\infty, 3) \cup (3, \infty)$

VA: $x=2$ HA: $y=3$

x-int: $(\frac{4}{3}, 0)$ y-int: $(0, 2)$

inc: NA dec: $(-\infty, 2) \cup (2, \infty)$



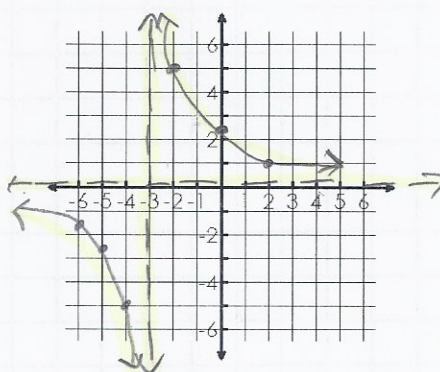
$$2. f(x) = \frac{5}{x+3}$$

Domain: $(-\infty, -3) \cup (-3, \infty)$ Range: $(-\infty, 0) \cup (0, \infty)$

VA: $x=-3$ HA: $y=0$

x-int: NA y-int: $(0, 5/3)$

inc: NA dec: $(-\infty, -3) \cup (-3, \infty)$



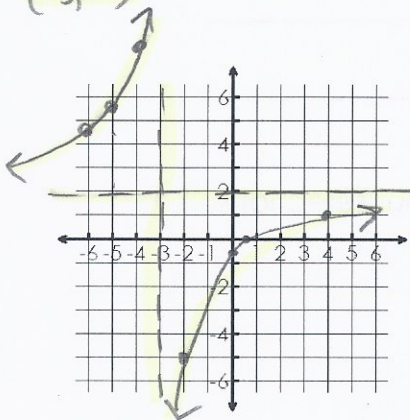
$$3. f(x) = \frac{2x-1}{x+3}$$

Domain: $(-\infty, -3) \cup (-3, \infty)$ Range: $(-\infty, 2) \cup (2, \infty)$

VA: $x=-3$ HA: $y=2$

x-int: $(\frac{1}{2}, 0)$ y-int: $(0, -1/3)$

inc: $(-\infty, -3) \cup (-3, \infty)$ dec: NA



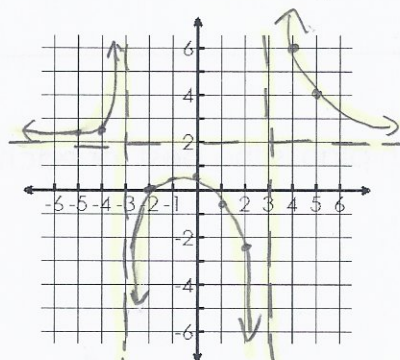
$$4. f(x) = \frac{2x^2+3x-2}{x^2-9} \quad (2x-1)(x+2)$$

Domain: $(-\infty, -3) \cup (-3, 3) \cup (3, \infty)$ Range: $(-\infty, \text{rel max}) \cup (\text{rel max}, \infty)$

VA: $x=3$ $x=-3$ HA: $y=2$

x-int: $(\frac{1}{2}, 0)$ $(-2, 0)$ y-int: $(0, 2/9)$

inc: $(-\infty, -3) \cup (-3, \text{rel max}) \cup (3, \infty)$ dec: $(\text{rel max}, 3)$



$$5. f(x) = \frac{3x}{x^2 + x - 20} \quad (x+5)(x-4)$$

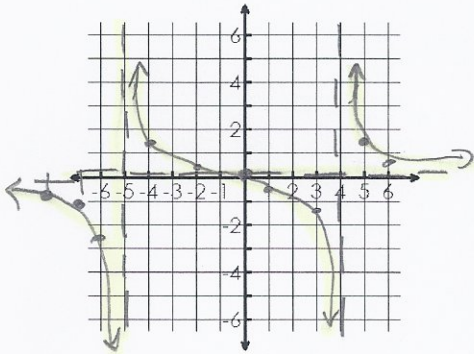
$$(-\infty, -5) \quad (-5, 4) \quad (4, \infty)$$

Domain: _____ Range: _____

VA: $x = -5$ $x = 4$ HA: $y = 0$

x-int: $(0, 0)$ y-int: $(0, 0)$

inc: NA dec: $(-\infty, -5)$ $(-5, 4)$ $(4, \infty)$



$$6. f(x) = \frac{4x-3}{x-1}$$

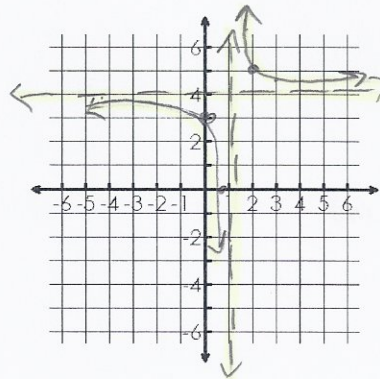
$$(-\infty, 1) \quad (1, \infty)$$

Domain: $(1, \infty)$ Range: $(4, \infty)$

VA: $x = 1$ HA: $y = 4$

x-int: $(\frac{3}{4}, 0)$ y-int: $(0, 3)$

inc: NA dec: $(-\infty, 1)$ $(1, \infty)$



7. Write a rational equation with vertical asymptotes of $x = 1$, $x = -2$.

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

8. Write a rational equation with no vertical asymptotes and a horizontal asymptote of $y = 0$.

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

9. Write a rational equation with vertical asymptotes of $x = 0$, $x = \frac{5}{2}$ and horizontal asymptote of $y = 2$.

$$f(x) = \frac{4x^2}{x(2x-5)}$$

10. Write a rational equation with vertical asymptote of $x = -1$, a horizontal asymptote of $y = 2$ and a zero at $x = 3$.

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

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