

$$f(-1) = \frac{8}{-1} = -8 \quad f(1) = \frac{8}{1} = 8$$

Test C 4.1 – 4.2

Name: _____

4a) Sketch a graph of the given equation.

b) Give or label the horizontal and vertical asymptote

$$y = \frac{8}{x}$$

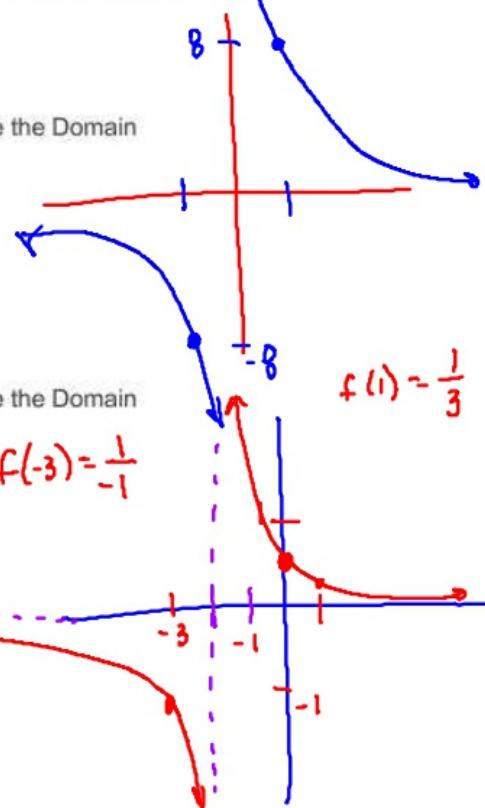
x-int: None $8 \neq 0$

y-int: $\frac{8}{0}$ None

$$VA: x=0 \rightarrow (-\infty, 0) \cup (0, \infty)$$

$$HA: y=0$$

c) Give the Domain



5a) Sketch a graph of the given equation.

b) Give or label the horizontal and vertical asymptote

$$y = \frac{1}{x+2}$$

x-int: $1 \neq 0$ NONE

$$VA: x+2=0$$

$$x=-2$$

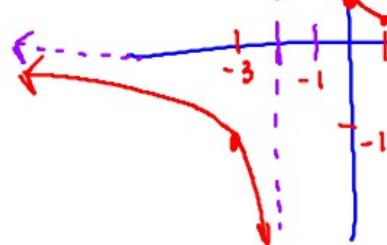
y-int: $\frac{1}{2}$ $(0, \frac{1}{2})$

HA: $y=0$

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

c) Give the Domain

$$f(-3) = \frac{1}{-1}$$



5. Use the equation to answer the following:

$$y = \frac{-4x + 8}{-5x + 15}$$

a) Find the vertical asymptote

$$-5x + 15 = 0 \\ 15 = 5x \\ x = 3$$

c) Find the y-intercept of the graph

$$y \text{ int} = \frac{8}{15}$$

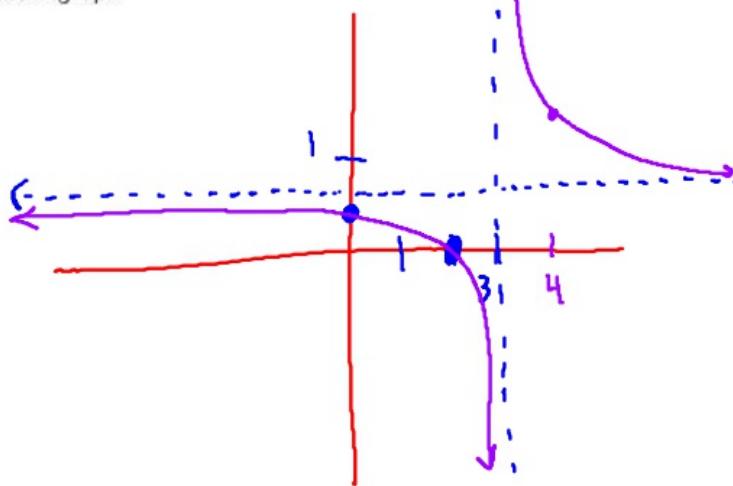
b) Find the horizontal asymptote

$$y = \frac{-4}{-5} = \frac{4}{5} = \frac{12}{15}$$

d) Find the x-intercept of the graph

$$-4x + 8 = 0 \\ 8 = 4x \\ x = 2$$

e) Sketch a graph



$$f(4) = \frac{-4(4) + 8}{-5(4) + 15}$$

$$= \frac{-16 + 8}{-20 + 15}$$

$$= \frac{-8}{-5} = \frac{8}{5}$$

6. Use the equation to answer the following:

$$y = \frac{x^2 - 7x + 12}{x^2 + 4x - 5} = \frac{(x-4)(x-3)}{(x+5)(x-1)}$$

a) Find the vertical asymptote

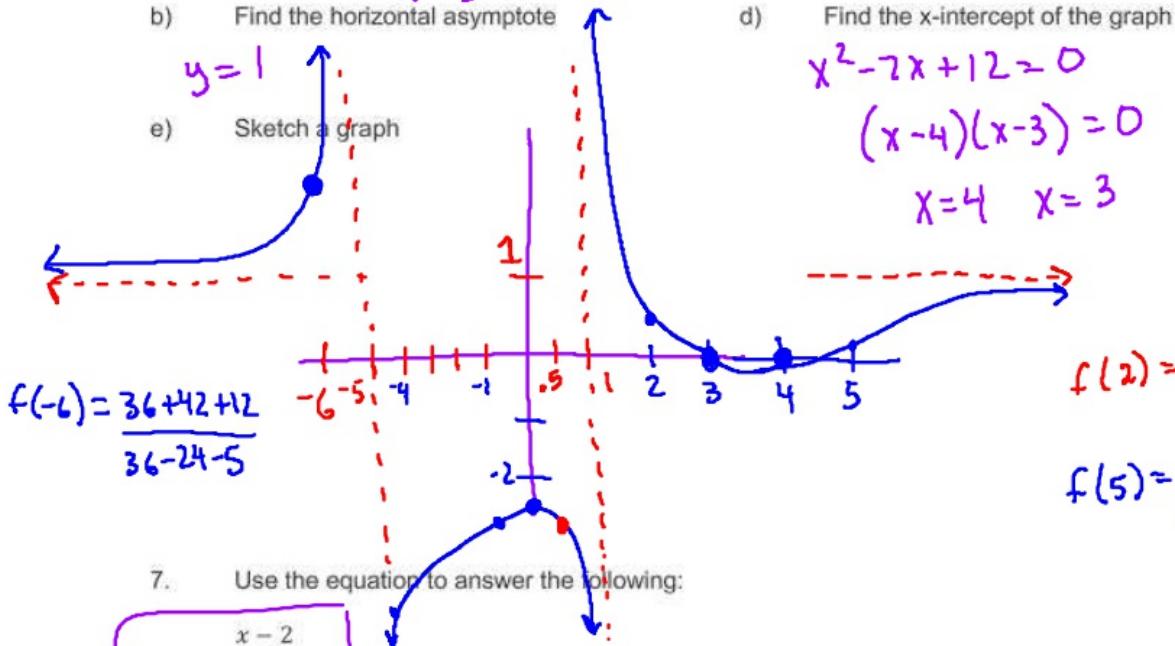
$$x^2 + 4x - 5 = 0 \quad (x+5)(x-1)$$

$$x = -5 \quad x = 1$$

b) Find the horizontal asymptote

$$y = 1$$

Sketch a graph



$$f(-1) = \frac{1+7+12}{1-4-5} = \frac{20}{-8} = -2.5 \quad f(0.5) = \frac{(-0.5)(-2.5)}{(0.5)(-0.5)} = \frac{12.5}{-0.25} = -50$$

$$f(-4) = \frac{16+28+12}{16-16-5} = \frac{56}{-5} = -11.2$$

c) Find the y-intercept of the graph

$$y_{\text{int}} = \frac{12}{-5} = -2\frac{2}{5}$$

d) Find the x-intercept of the graph

$$x^2 - 7x + 12 = 0$$

$$(x-4)(x-3) = 0$$

$$x = 4 \quad x = 3$$

$$f(2) = \frac{4-14+12}{4+8-5} = \frac{2}{7}$$

$$f(5) = \frac{25-35+12}{25+20-5} = \frac{2}{40} = \frac{1}{20}$$

7. Use the equation to answer the following:

$$y = \frac{x-2}{x^2 - 5x - 14}$$

$$x^2 - 5x - 14 = 0 \quad (x-7)(x+2)$$

$$x = 7 \quad x = -2$$

b) Find the horizontal asymptote

$$y = 0$$

e) Sketch a graph

$$f(-2) = \frac{-5}{9+15-14} = \frac{-5}{10}$$

$$f(8) = \frac{6}{64-40-14} = \frac{6}{10} = \frac{3}{5}$$

c) Find the y-intercept of the graph

$$y_{\text{int}} = \frac{2}{14} = \frac{1}{7}$$

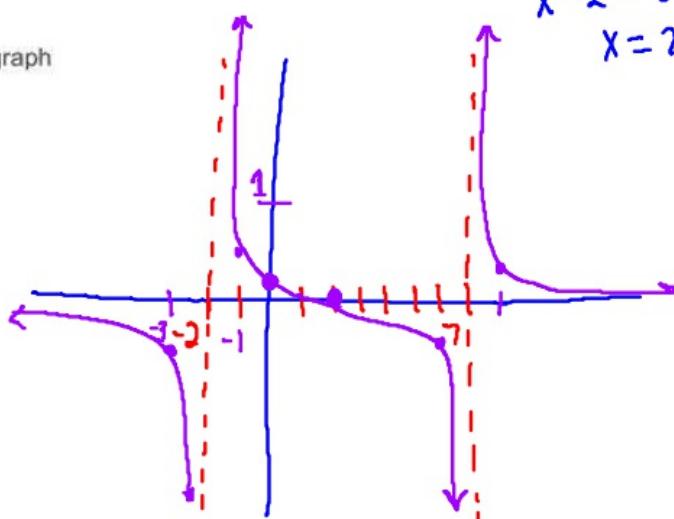
d) Find the x-intercept of the graph

$$x-2 = 0$$

$$x = 2$$

$$f(-1) = \frac{-3}{1+5-14} = \frac{-3}{-8} = \frac{3}{8}$$

$$f(6) = \frac{4}{36-30-14} = \frac{4}{-8} = -\frac{1}{2}$$



8. Use the equation to answer the following:

$$y = \frac{x^2 - x - 30}{x^2 - 3x - 18} = \frac{(x-6)(x+5)}{(x-6)(x+3)}$$

a) Find the vertical asymptote

$$x^2 - 3x - 18 = 0 \\ (x-6)(x+3) = 0 \\ x=6 \quad x=-3$$

b) Find the horizontal asymptote

$$y = 1$$

e) Find the x and y coordinate of the hole

$$x=6 \quad y = \frac{x+5}{x+3}$$

$$y = \frac{11}{9}$$

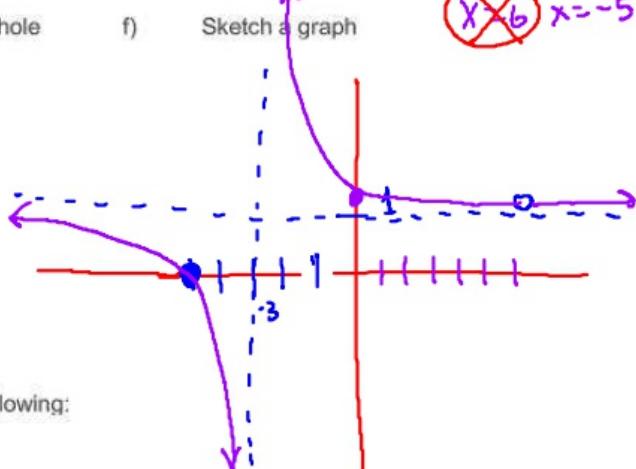
c) Find the y-intercept of the graph

$$y\text{-int} = \frac{30}{18} = \frac{15}{9} = \frac{5}{3} = 1\frac{2}{3}$$

d) Find the x-intercept of the graph

$$x^2 - x - 30 = 0 \\ (x-6)(x+5) = 0 \\ x=6 \quad x=-5$$

f) Sketch a graph



9. Use the equation to answer the following:

$$y = \frac{x^2 - 3x - 10}{x - 2}$$

a) Find the vertical asymptote

$$x-2=0 \quad x=2$$

b) Find the slant asymptote

$$\boxed{y = x-1}$$

e) Sketch a graph

$$\begin{array}{r} 2 | & 1 & -3 & -10 \\ & & 2 & \\ \hline & 1 & -1 & \end{array}$$

$y = x-1$

c) Find the y-intercept of the graph

$$y\text{-int} = \frac{10}{2} = 5$$

d) Find the x-intercept of the graph

$$x^2 - 3x - 10 = 0 \\ (x-5)(x+2) = 0 \\ x=5 \quad x=-2$$

