

4a) Sketch a graph of the given equation. *Graph on Back*

b) Give or label the horizontal and vertical asymptote

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

V.A. $x = 0$

H.A. $y = 0$

c) Give the Domain

$$D: (-\infty, 0) \cup (0, \infty)$$

$$x = 1 \quad \frac{8}{1} = \frac{+}{+} \uparrow$$

$$x = -1 \quad \frac{8}{-1} = \frac{+}{-} \downarrow$$

5a) Sketch a graph of the given equation.

b) Give or label the horizontal and vertical asymptote

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

V.A. $x = -2$

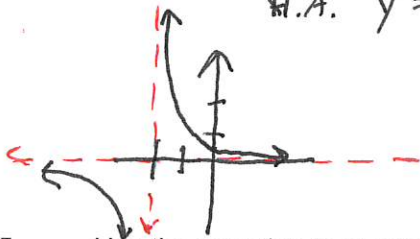
H.A. $y = 0$

c) Give the Domain

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

$$x = -1 \quad \frac{1}{-1+2} = \frac{+}{+} \uparrow$$

$$x = -3 \quad \frac{1}{-3+2} = \frac{+}{-} \downarrow$$



5. Use the equation to answer the following: *Graph on Back*

$$y = \frac{-4x + 8}{-5x + 15} = \frac{-4(x-2)}{-5(x-3)}$$

a) Find the vertical asymptote

$$\begin{aligned} -5x + 15 &= 0 \\ -5x &= -15 \\ x &= 3 \end{aligned}$$

c) Find the y-intercept of the graph

$$\frac{-4(0) + 8}{-5(0) + 15} = \frac{8}{15} \quad (0, \frac{8}{15})$$

b) Find the horizontal asymptote

$$y = \frac{4}{5}$$

d) Find the x-intercept of the graph

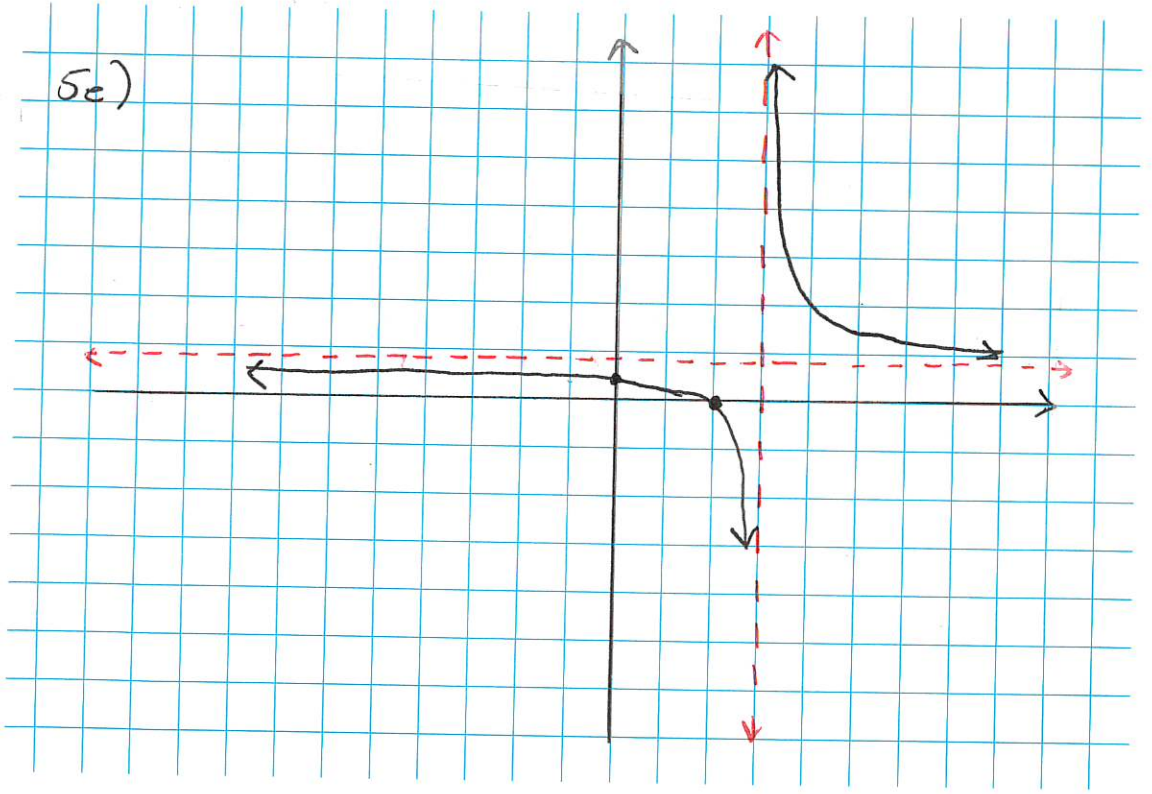
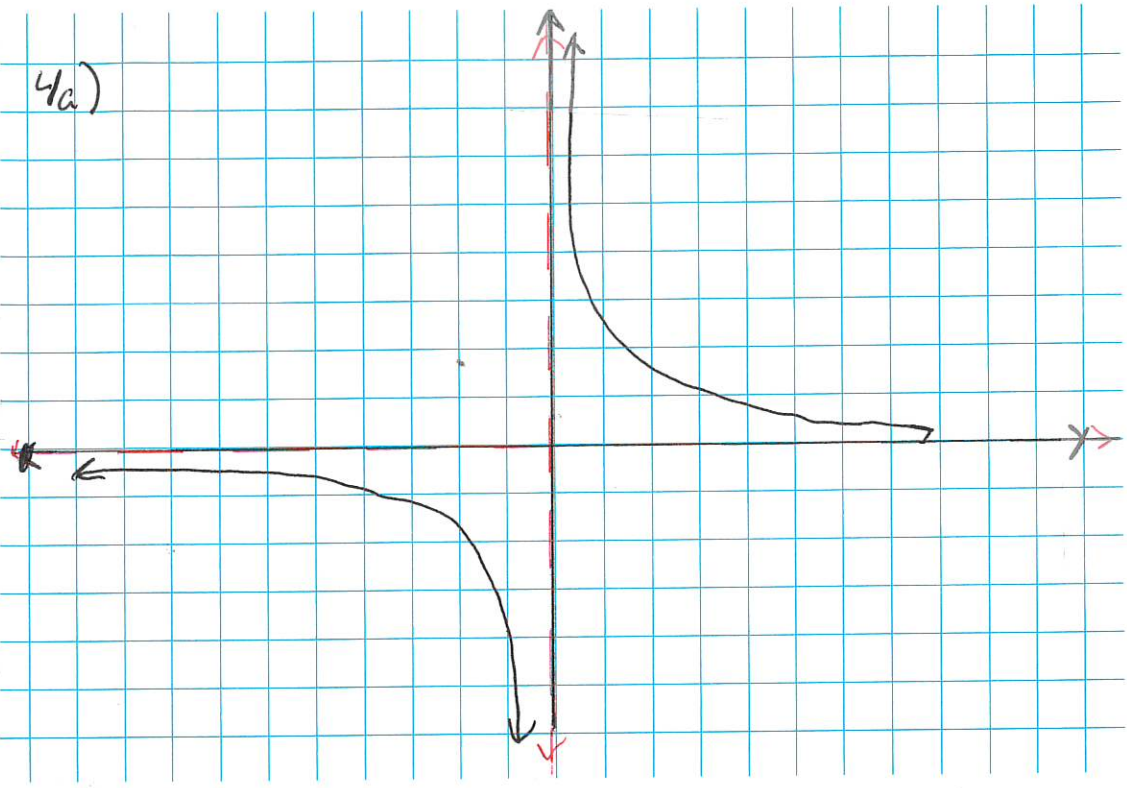
$$\begin{aligned} -4x + 8 &= 0 \\ -4x &= -8 \\ x &= 2 \end{aligned}$$

e) Sketch a graph

$$x = 2.5$$

$$\frac{-4(2.5-2)}{-5(2.5-3)} = \frac{-}{+} \downarrow$$

$$\frac{-4(3.5-2)}{-5(3.5-3)} = \frac{-}{-} \uparrow$$



6. Use the equation to answer the following: *Graph on Back*

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

a) Find the vertical asymptote

$$x = -5, 1$$

b) Find the horizontal asymptote

$$y = 1$$

e) Sketch a graph

$$x = 1.5$$

$$\frac{(1.5-4)(1.5-3)}{(1.5+5)(1.5-1)} \quad \frac{(-)(-)}{(+)(+)} = \frac{+}{+} \uparrow$$

c) Find the y-intercept of the graph

$$(0, -\frac{12}{5})$$

d) Find the x-intercept of the graph

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

$$x = -6.5$$

$$\frac{(-6.5-4)(-6.5-3)}{(-6.5+5)(-6.5-1)} \quad \frac{(-)(-)}{(-)(-)} = \frac{+}{+} \uparrow$$

$$x = -4.5$$

$$\frac{(-4.5-4)(-4.5-3)}{(-4.5+5)(-4.5-1)} \quad \frac{(-)(-)}{(+)(-)} = \frac{+}{-} \downarrow$$

$$x = .5$$

$$\frac{(.5-4)(.5-3)}{(.5+5)(.5-1)} \quad \frac{(-)(-)}{(+)(-)} = \frac{+}{-} \downarrow$$

7. Use the equation to answer the following: *Graph on Back*

$$y = \frac{x-2}{x^2-5x-14} \quad \frac{x-2}{(x-7)(x+2)}$$

a) Find the vertical asymptote

$$x = 7, -2$$

b) Find the horizontal asymptote

$$y = 0$$

e) Sketch a graph

$$x = -3$$

$$\frac{-3-2}{(-3-7)(-3+2)} \quad \frac{-}{(-)(-)} = \frac{-}{+} \downarrow$$

$$x = 6$$

$$\frac{6-2}{(6-7)(6+2)} \quad \frac{+}{(-)(+)} = \frac{+}{-} \downarrow$$

$$x = -1$$

$$\frac{-1-2}{(-1-7)(-1+2)} \quad \frac{-}{(-)(+)} = \frac{-}{-} \uparrow$$

$$x = 8$$

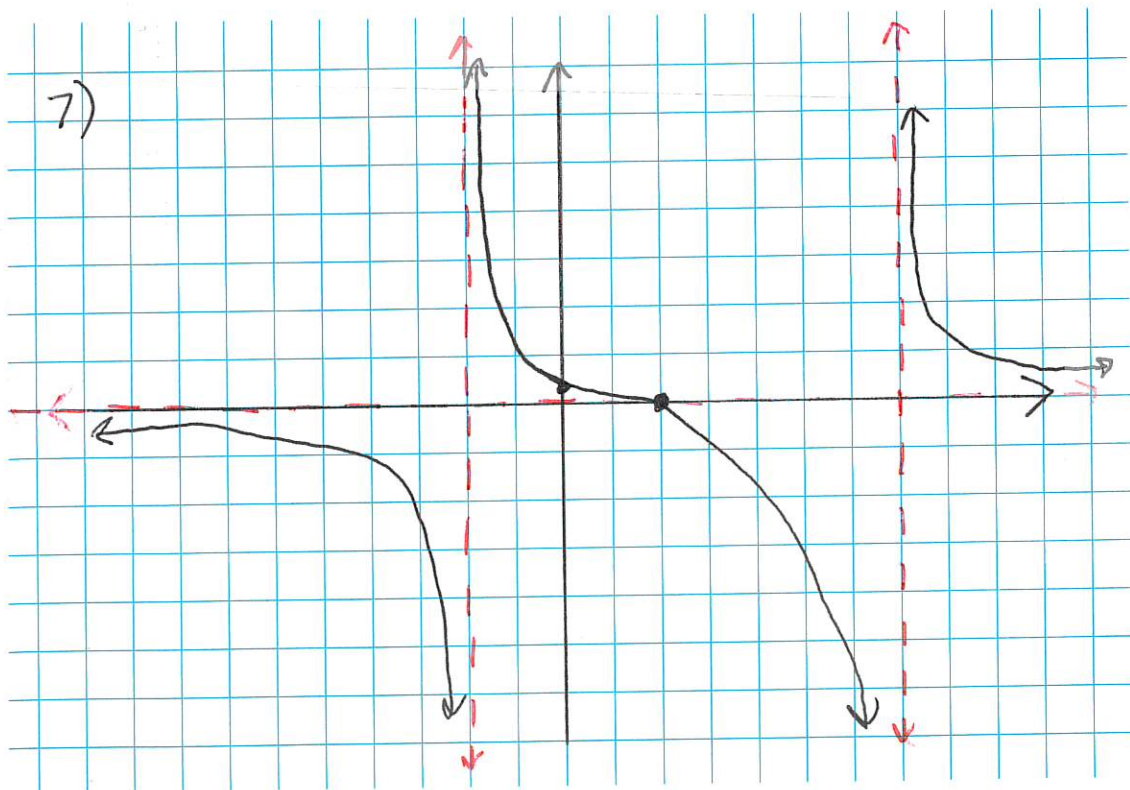
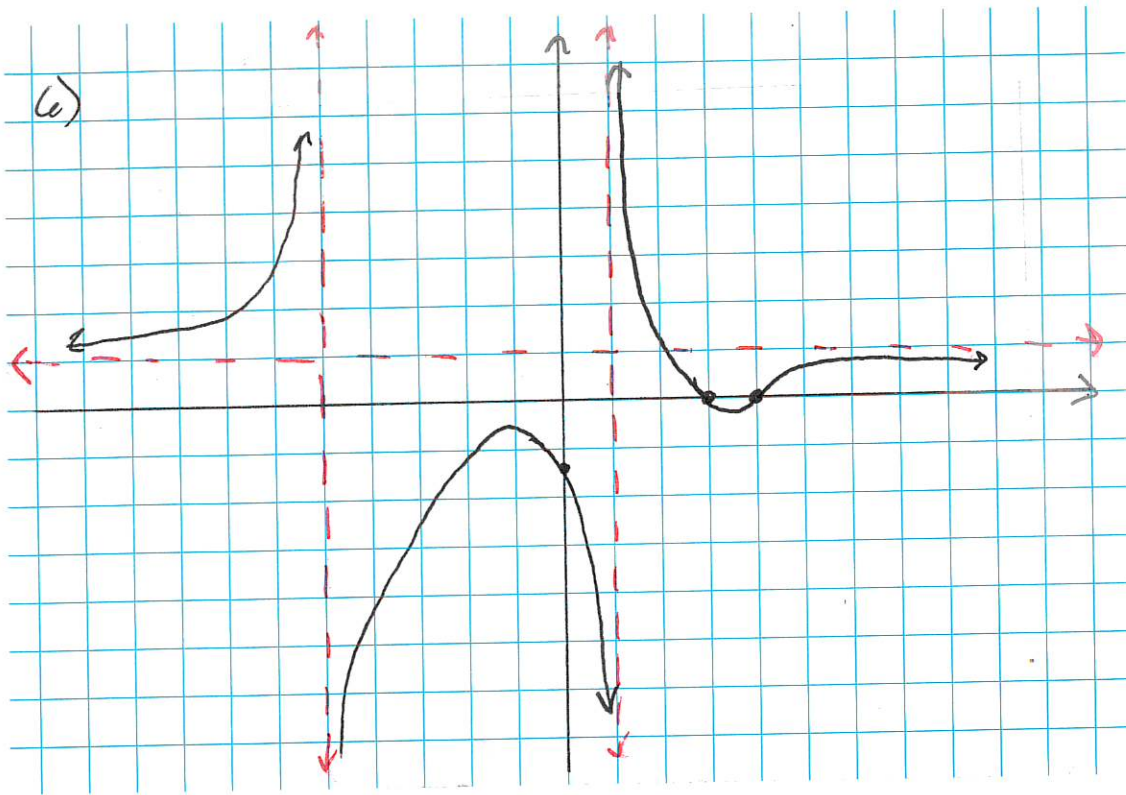
$$\frac{8-2}{(8-7)(8+2)} \quad \frac{+}{(+)(+)} = \frac{+}{+} \uparrow$$

c) Find the y-intercept of the graph

$$(0, \frac{1}{7})$$

d) Find the x-intercept of the graph

$$x = 2$$



8. Use the equation to answer the following: *Graph on Board*

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

a) Find the vertical asymptote
 $x = -3$

b) Find the horizontal asymptote
 $y = 1$

e) Find the x and y coordinate of the hole
Hole @ $x = 6$

$$y = \frac{(x-6)(x+5)}{(x-6)(x+3)} = \frac{x+5}{x+3}$$

Let $x = 6$

$$\frac{6+5}{6+3} = \frac{11}{9}$$

$(6, \frac{11}{9})$

c) Find the y-intercept of the graph

$$(0, \frac{30}{18}) = (0, \frac{5}{3})$$

d) Find the x-intercept of the graph

$$x = -5$$

$$(-5, 0)$$

f) Sketch a graph

$$x = -2.5$$

$$\frac{(-2.5-6)(-2.5+5)}{(-2.5-6)(-2.5+3)} = \frac{(-)(+)}{(-)(+)} = \frac{-}{+} \uparrow$$

$$x = -3.5$$

$$\frac{(-3.5-6)(-3.5+5)}{(-3.5-6)(-3.5+3)} = \frac{(-)(+)}{(-)(-)} = \frac{-}{+} \downarrow$$

9. Use the equation to answer the following: *Graph on Board*

$$y = \frac{x^2 - 3x - 10}{x - 2} = \frac{(x-5)(x+2)}{x-2}$$

a) Find the vertical asymptote
 $x = 2$

b) Find the slant asymptote
 $y = x - 1$

e) Sketch a graph

$$x = 2.5$$

$$\frac{(2.5-5)(2.5+2)}{2.5-2} = \frac{(-)(+)}{+} = \downarrow$$

$$x = 1.5$$

$$\frac{(1.5-5)(1.5+2)}{1.5-2} = \frac{(-)(+)}{(-)} = \uparrow$$

c) Find the y-intercept of the graph

$$(0, 5)$$

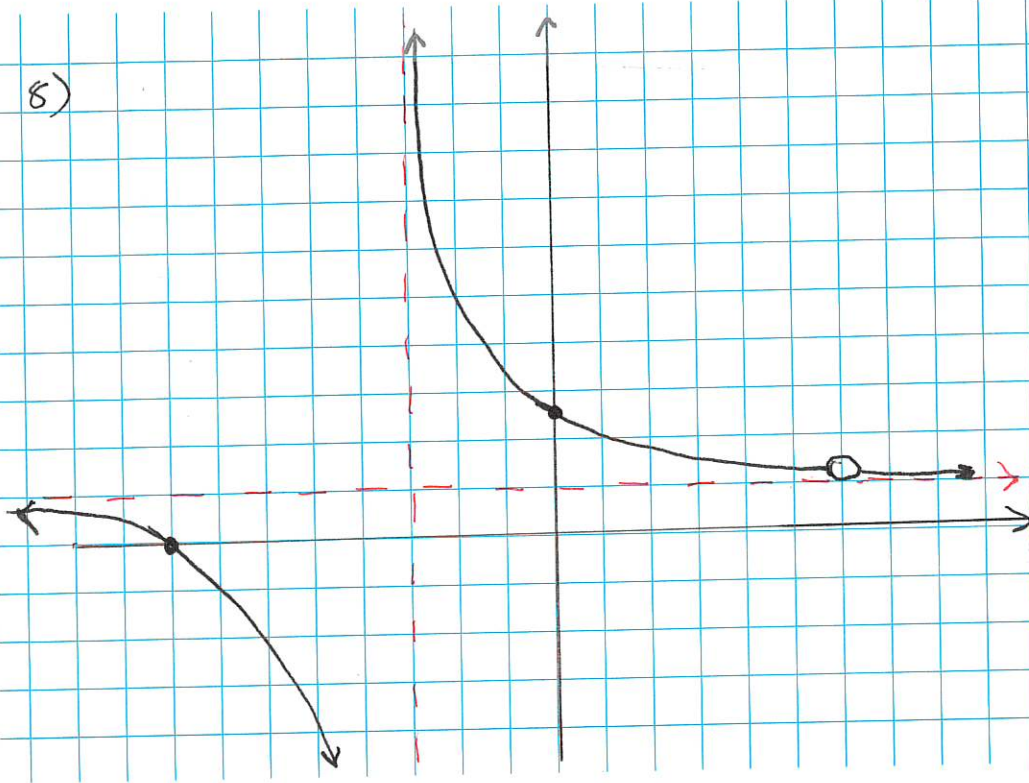
d) Find the x-intercept of the graph

$$(5, 0) \quad (-2, 0)$$

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

$$y = x - 1$$

8)



9)

