

$$1.) f(x) = \frac{-2x^2 - 8x}{x^2 + 3x - 4} = \frac{-2x(x+4)}{(x+4)(x-1)} = \frac{-2x}{x-1}$$

y-unt (0,0) Domain:  $x \neq -4, x \neq 1$  hole  $(-4, \frac{8}{5})$   $\frac{-2(-4)}{-4-1}$   
 H.A:  $y = -2$   $(-\infty, -4) \cup (-4, 1) \cup (1, \infty)$  x-unt (0,0)  
 O.A: none v.A:  $x = 1$

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

y-unt (0,0) Domain  $x \neq 2$  holes: none  
 H.A:  $y = 0$   $(-\infty, 2) \cup (2, \infty)$  x-unt (0,0)  
 O.A: none v.A:  $x = 2$

$$3.) f(x) = \frac{x^3 + 7x^2 + 12x}{3x^2 + 15x + 18} = \frac{x(x+4)(x+3)}{3(x+3)(x+2)} = \frac{x(x+4)}{3(x+2)}$$

y-unt (0,0) Domain  $x \neq -3, -2$  hole  $(-3, -1)$   $\frac{-3(-3+4)}{3(-3+2)}$   
 H.A: none  $(-\infty, -3) \cup (-3, -2) \cup (-2, \infty)$  x-unt  
 O.A:  $y = \frac{1}{3}x + \frac{2}{3}$   $(0,0), (-4,0)$   
 v.A:  $x = -2$

$$\begin{array}{r}
 3x^2 + 15x + 18 \overline{) x^3 + 7x^2 + 12x} \\
 \underline{- (x^3 + 5x^2 + 6x)} \\
 2x^2 + 6x
 \end{array}$$

$$4.) f(x) = \frac{-x-4}{x} = -\frac{(x+4)}{x}$$

y-unt: none Domain  $x \neq 0$  hole none  
 H.A  $y = -1$   $(-\infty, 0) \cup (0, \infty)$  x-unt  $(-4, 0)$   
 O.A: none v.A  $x = 0$

$$5.) f(x) = \frac{2}{x^2+2x-3} = \frac{2}{(x+3)(x-1)}$$

y-unt  $(0, -2/3)$

Domain:  $x \neq +1, -3$

holes: none

$(-\infty, -3) \cup (-3, 1) \cup (1, \infty)$

x-unt: none

H.A:  $y = 0$

VA:  $x = -3 \quad x = 1$

O.A: none

$$6.) f(x) = \frac{x^2+4x}{-2x^2+8} = \frac{x(x+4)}{-2(x+2)(x-2)}$$

y-unt  $(0, 0)$

Domain  $x \neq \pm 2$

holes: none

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

x-unt  $(0, 0) (-4, 0)$

H.A  $y = -1/2$

VA  $x = -2 \quad x = 2$

O.A: none