1. Find all Holes, Vertical Asymptotes, Horizontal Asymptotes, x-intercepts, and y-intercepts, if any.

$$y = \frac{4x^3 - 8x^2 - 12x}{2x^3 + x^2 - 18x - 9}$$
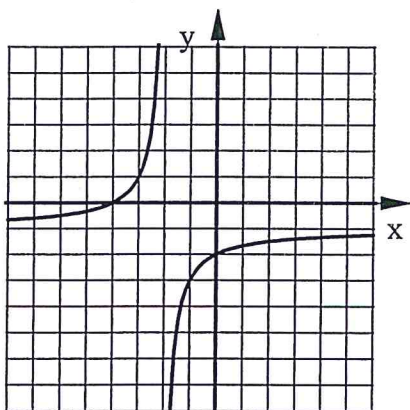
Holes: x-int:

VA: y-int:
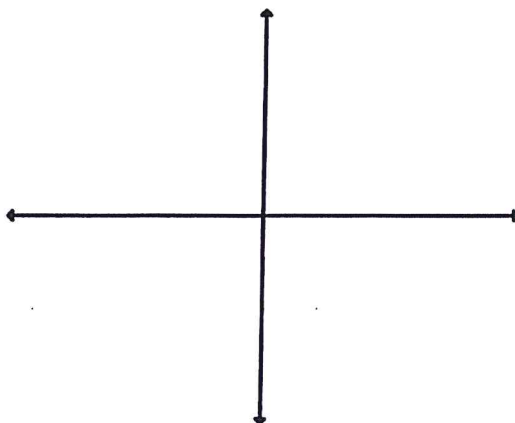
HA:

2. Simplify. State restrictions on the variables. $\dfrac{x^2 + x - 2}{2x^3 + 12x^2 + 16x} \div \dfrac{4x^2 + 4x - 8}{6x^4 + 48x^3 + 96x^2}$

3. Write the equation of this graph which is a transformation of $y = \frac{2}{x}$

4. Sketch this rational function. Show the asymptotes as dashed lines and write the equation next to each asymptote.

$$y = \frac{0.3}{x - 4} + 2$$

1

1. Find all Holes, Vertical Asymptotes, Horizontal Asymptotes, x-intercepts, and y-intercepts, if any.

$$y = \frac{4x^3 - 8x^2 - 12x}{2x^3 + x^2 - 18x - 9}$$

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

Holes: $X = 3$

VA: $X = -3, -\frac{1}{2}$

HA: $y = \frac{4}{2} = 2$

x-int: $X = -1, 0$

y-int: $y = 0$

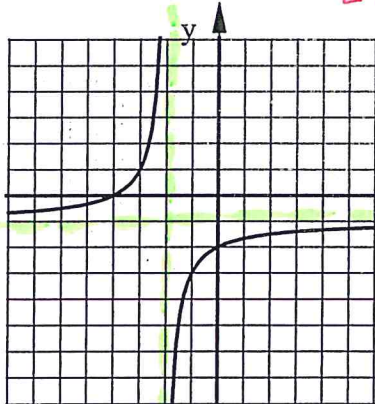2. Simplify. State restrictions on the variables.

$$\frac{x^2 + x - 2}{2x^3 + 12x^2 + 16x} \div \frac{4x^2 + 4x - 8}{6x^4 + 48x^3 + 96x^2}$$

$$= \frac{(x+2)(x-1)}{2x(x+2)(x+4)} \cdot \frac{6x^2(x+4)^2}{4(x+2)(x-1)}$$

$$= \boxed{\frac{3x(x+4)}{4(x+2)} \qquad X \neq 0, -2, -4, 1}$$

3. Write the equation of this graph which is a transformation of $y = \frac{2}{x}$

VA X = -2   2 Left

HA
Y = -1

1 down

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

4. Sketch this rational function. Show the asymptotes as dashed lines and write the equation next to each asymptote.

2 up HA
y = 2

close to ASYMP.

$$y = \frac{0.3}{x-4} + 2$$

4 RIGHT

VA
X = 4

HA
y = 2

VA
X = 4

1