

Practice: Graph the following rational functions.

Include all x-intercepts, y-intercepts and asymptotes.

a) $y = \frac{-x^2+3x+3}{x-1}$

V.A. @ $x=1$

$$\begin{array}{r|rr} 1 & -1 & 3 & 3 \\ & -1 & 2 & \\ \hline & -1 & 2 & 5 \end{array}$$

 O.A. @ $y=-x+2$

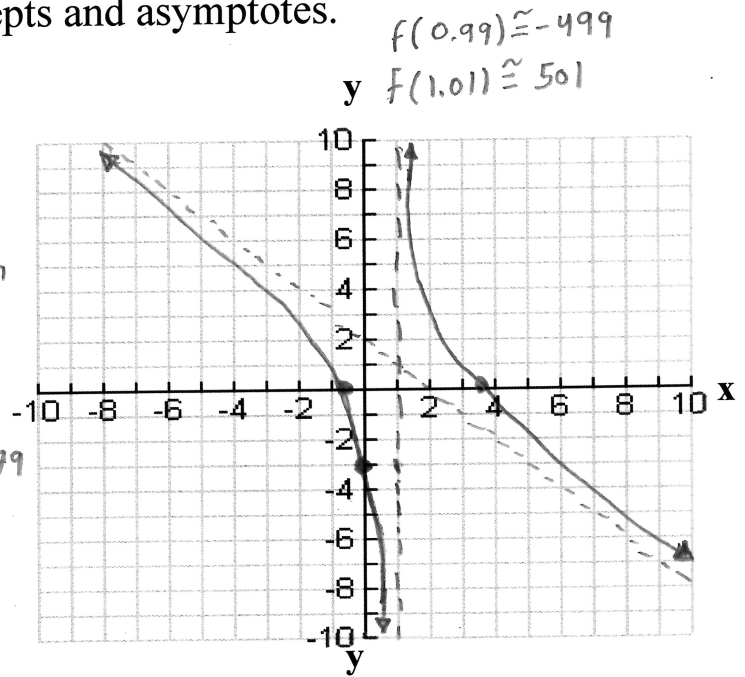
x-int ($y=0$)
 $-x^2+3x+3=0$
 $x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$
 $= \frac{-3 \pm \sqrt{(-3)^2 - 4(-1)(3)}}{2(-1)}$
 $= \frac{-3 \pm \sqrt{21}}{-2}$

x-ints: 3.79 and -0.79

y-int ($x=0$)

$y = \frac{-(0)^2+3(0)+3}{(0)-1}$

y-int = -3



b) $y = \frac{2x^2-10x+12}{x-2}$

At $x=2, y=0$

$= \frac{2(x^2-5x+6)}{x-2}$

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

$y = 2x - 6, x \neq 2$
 hole

x-int ($y=0$)

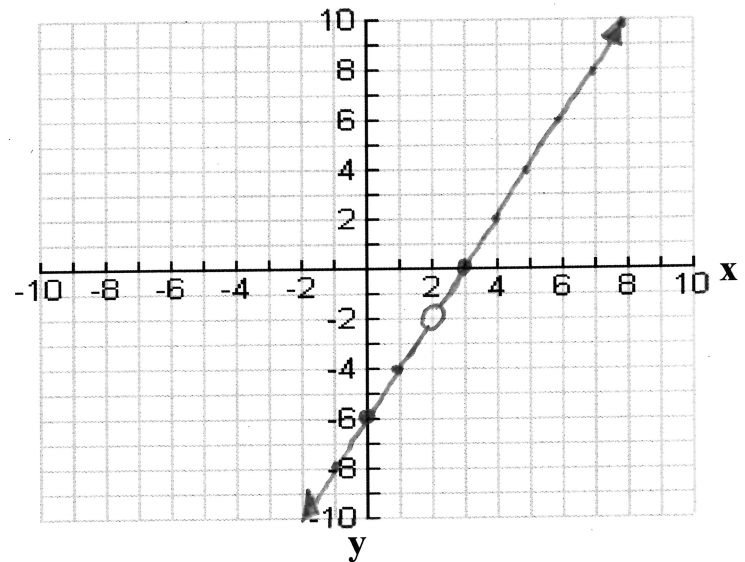
$0 = 2x - 6$

$\frac{6}{2} = \frac{2x}{2}$

x-int = 3

y-int ($x=0$)

y-int = -6



c) $y = \frac{-4x+12}{x+3}$

V.A. @ $x=-3$

H.A. @ $y = -\frac{4}{1} = -4$

x-int ($y=0$)

$-4x+12=0$

$-\frac{4x}{-4} = \frac{-12}{-4}$

x-int = 3

y-int ($x=0$)

$y = \frac{-4(0)+12}{(0)+3}$

y-int = 4

$f(1000000) = -3.999976$ $f(-2.99) = +$
 $f(-1000000) = 4.000024$ $f(-3.01) = -$

