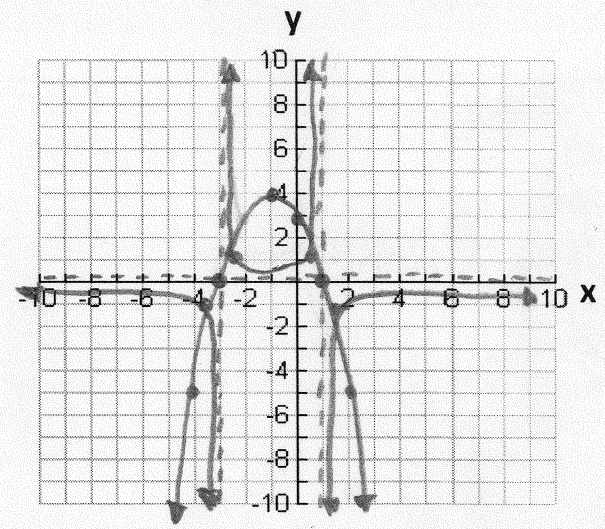


1. Sketch the function $f(x) = -(x-1)(x+3)$ then use this graph to sketch the function $g(x) = \frac{1}{-(x-1)(x+3)}$.

$f(x) = -(x-1)(x+3)$
 x-ints: 1, -3
 y-int: 3
vertex
 $x = \frac{1-3}{2} \quad y = -(-1-1)(-1+3)$
 $\quad \quad \quad = -(-2)(2)$
 $x = -1 \quad y = 4$



2. Sketch the following rational function $g(x) = \frac{-x^3 - x^2 + 11x - 10}{x^2 - 3x + 2}$. Include x/y - Intercepts.

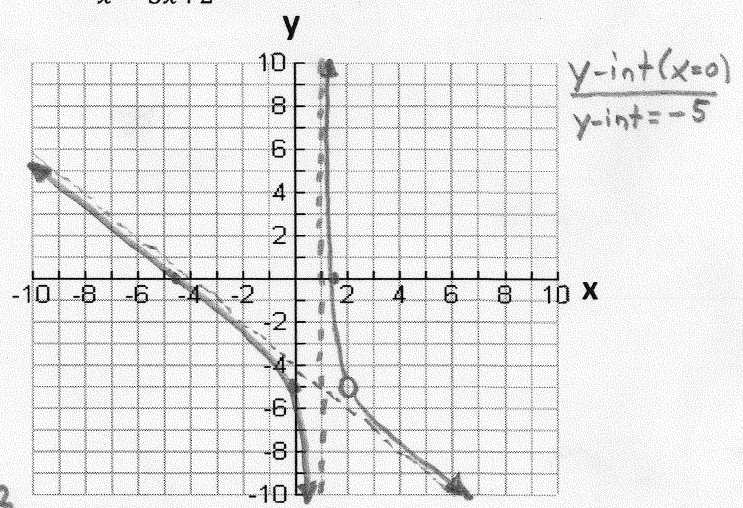
$g(x) = \frac{-x^3 - x^2 + 11x - 10}{x^2 - 3x + 2}$
 f(1) = -1
 f(-1) = -21
 f(2) = 0
 $\therefore x-2$ is a factor

$$\begin{array}{r|rrrr} 2 & -1 & -1 & 11 & -10 \\ & & -2 & -6 & 10 \\ \hline & -1 & -3 & 5 & 0 \end{array}$$

 $g(x) = \frac{(x-2)(-x^2-3x+5)}{(x-1)(x-2)}$
 Hole @ $x=2$
 V.A. @ $x=1$

$$\begin{array}{r|rr} 1 & -1 & -3 & 5 \\ & & -1 & -4 \\ \hline & -1 & -4 & 1 \end{array}$$

 O.A. @ $y = -x - 4$
 $x\text{-int}(y=0) = \frac{b \pm \sqrt{b^2 - 4ac}}{-2} = \frac{3 \pm \sqrt{29}}{-2}$
 $x\text{-int} = -4.2$ or 1.2



3. Solve the following rational equation: $\frac{x+2}{x} - \frac{x+2}{x-1} = -2$

$\frac{(x-1)(x+2) - (x+2)x}{(x-1)x} = -2$
 $\frac{x^2 + x - 2 - x^2 - 2x}{x(x-1)} = \frac{-2}{1}$
 $\frac{-x-2}{x^2-x} = \frac{-2}{1}$
 $-x-2 = -2x^2+2x$
 $2x^2-3x-2=0$
 $2x^2-4x+x-2=0$
 $2x(x-2)+1(x-2)=0$
 $(2x+1)(x-2)=0$
 $x = -\frac{1}{2}, x = 2$

4. Solve the following inequality: $-2x \leq \frac{6x-16}{x-1}$

$-\frac{2x(x-1) - (6x-16)}{1(x-1)(x-1)} \leq 0$
 $-\frac{2x^2+2x-6x+16}{x-1} \leq 0$
 $-\frac{2x^2-4x+16}{x-1} \leq 0$

(x-int)(V.A.) (x-int)
 $x = -4 \quad x = 1 \quad x = 2$

-2	-	-	-	-
$x+4$	-	+	+	+
$x-2$	-	-	-	+
$x-1$	-	-	+	+
	+	⊖	+	⊖

$-4 \leq x < 1$ $x \geq 2$