5. (10pts) Perform the operations and simply.

(a). $\dfrac{3}{x^2-x-2} - \dfrac{10}{x^2+x-6} = \dfrac{3}{(x-2)(x+1)} - \dfrac{10}{(x+3)(x-2)} = \dfrac{3(x+3)-10(x+1)}{(x-2)(x+1)(x+3)}$

$= \dfrac{3x+9-10x-10}{(x-2)(x+1)(x+3)} = \dfrac{-7x-1}{(x-2)(x+1)(x+3)}$

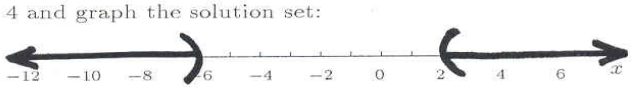
(b). $\dfrac{\left[\dfrac{x^2-4}{x}\right]}{\left[\dfrac{(x-2)^2}{x}\right]} = \dfrac{(x-2)(x+2)}{x} \cdot \dfrac{x}{(x-2)^2} = \dfrac{(x-2)(x+2)}{(x-2)(x-2)}$

$= \dfrac{x+2}{x-2}, \quad x \neq 2$

6. (10pts) Solve the inequality $|x+2| > 4$ and graph the solution set:

$x+2 > 4$ or $x+2 < -4$

$x > 2$ or $x < -6$



7. (10pts) Solve the inequality $x^3 + x^2 - 6x > 0$ and graph solution set.

$x(x^2+x-6) > 0$

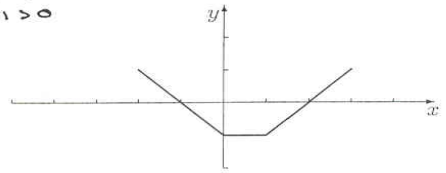
$x(x+3)(x-2) > 0$

critical numbers $x=0$, $x=-3$, $x=2$

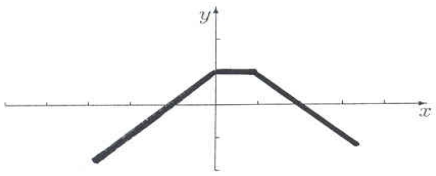
Test $x=-4$ $\quad -4(-1)(-6) < 0$ $\quad x=1$ $\quad 1(4)(-1) < 0$

$x=-1$ $\quad -1(2)(-3) > 0$ $\quad x=3$ $\quad 3 \cdot 6 \cdot 1 > 0$

8. (10pts) The graph of a function $f(x)$ is on the right. Graph the given functions.

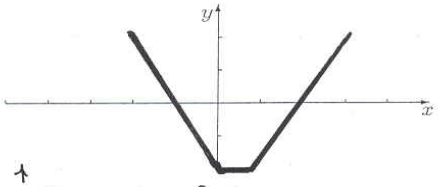


(a). $y = -f(x)$



reflection in x-axis

(b). $y = 2f(x)$



stretched by factor 2

pg score