Unit 6 Review

1. Given that

$f(x) = x^2 + 2x - 8$ $\quad g(x) = x^2 - 3x + 2$ $\quad h(x) = x^3 + 3x^2 - x - 3$

$l(x) = \{(-5,-3),(-2,-4),(-1,2),(0,4),(3,5)\}$ $\quad m(x) = \{(-3,5),(-2,-1),(-1,3),(5,0)\}$

Find

a. $f(x) + h(x)$
b. $f(x) - g(x)$
c. $f^{-1}(x)$
d. $\frac{h(x)}{g(x)}$
e. $(f \circ g)(x)$
f. $(lm)(x)$
g. $D_{\frac{l}{m}}$
h. $(l \circ m)^{-1}(x)$
i. $l^{-1}(m(x))$

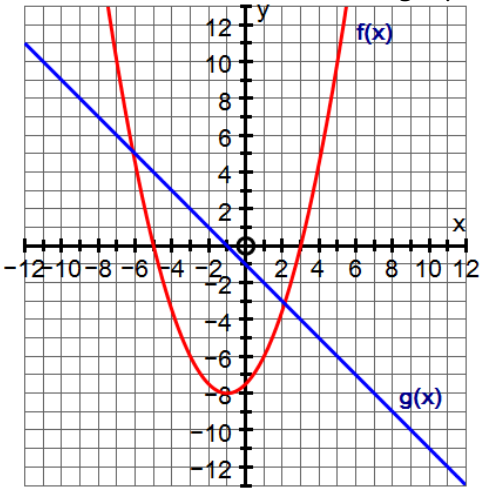
2. Given $f(x) = 2x - 7$, $h(x) = \{(-1,3),(0,4),(1,7),(2,5),(3,-2)\}$, and $k(x) = \{(-4,1),(-3,5),(-2,3),(1,6)\}]$

Find

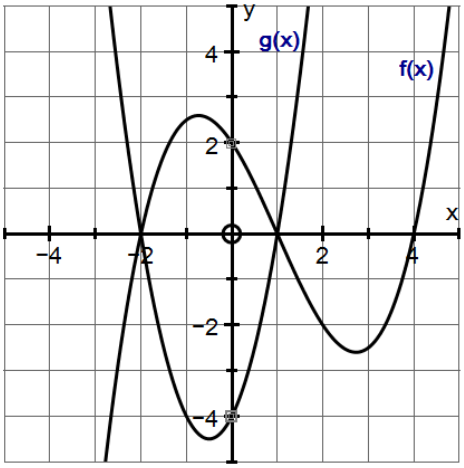
a. $(h \circ k)(x)$ b. $(k \circ h)(x)$ c. $(f \circ h)(x)$ d. $(k \circ f)(x)$

3. If D_f: $x\epsilon(-\infty,-3) \cup (2,5) \cup (7,\infty), x\epsilon R$ and D_g: $x\epsilon(-8,-2) \cup [0,3] \cup [5,15], x\epsilon R$ then determine D_{f+g}.

4. Given $f(x)$ and $g(x)$ below, graph $(fg)(x)$ using points. Also, determine the equation of $(fg)(x)$.



5. Given $f(x)$ and $g(x)$ below, graph $\frac{f(x)}{g(x)}$ by determining its equation.



Using the graph

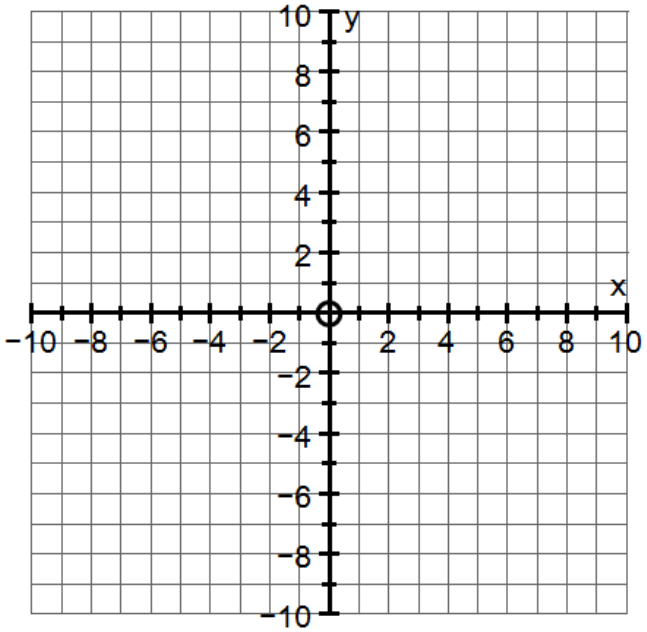
a) How would you determine the location of the VA(s) of $\frac{f(x)}{g(x)}$.

b) How would you determine the location of the Hole(s) of $\frac{f(x)}{g(x)}$.

6. Solve $\frac{x+1}{x-3} \geq \frac{4x+9}{x^2-2x-3}$ by method of zeros (by completing a chart). $[x\epsilon(-\infty,-2] \cup (-1,3) \cup [4,\infty), x\epsilon R]$

7. Solve $\frac{2}{x-4} \geq x-3$ by method of points of intersection (by graphing). $[x\epsilon(-\infty,2] \cup (4,5], x\epsilon R]$

Points of Intersection Work:



8. Find the domain of $f(g(x))$ if $f(x) = \frac{3x-4}{2x-6}$ and $g(x) = x^2 - 6x + 8$. $[\{x\epsilon R | x \neq 1,5\}]$

9. Find $g(x)$ if $f(g(x)) = h(x)$ where $f(x) = x^2 - 6x + 2$ and $h(x) = 9x^2 - 24x + 9$. $[g(x) = 3x - 1 \; or \; g(x) = -3x + 7]$