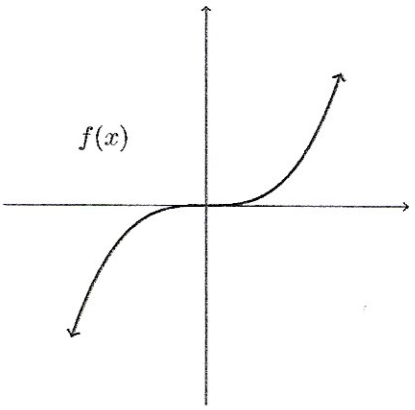
Name: Solution

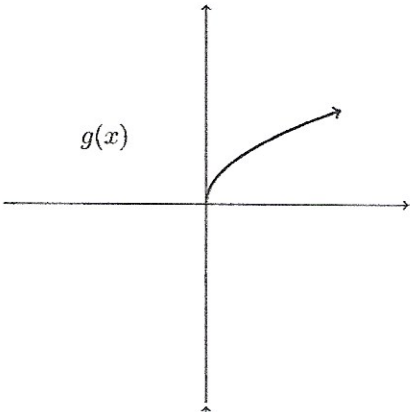
MAC1105 Section 1A26
Quiz 9

Please show all of your work in a NEAT and ORGANIZED fashion.

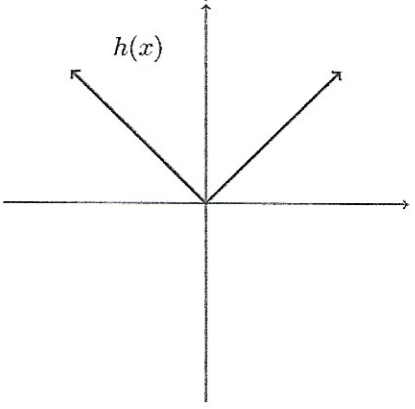
1. (3 points) Write down the equation of each basic function.



$f(x) = x^3$



$g(x) = \sqrt{x}$



$h(x) = |x|$

2. (4 points) Find the equation of the quadratic function $f(x)$ with vertex $(5, -2)$ and passing through the point $(7, 14)$.

$f(x) = a(x-h)^2 + k$ Vertex $= (h,k) = (5,-2)$

$f(x) = a(x-5)^2 - 2$ passes through $(x,y) = (7,14)$

$14 = a(7-5)^2 - 2$

$14 = a(2^2) - 2$

$16 = 4a$

$a = 4 \longrightarrow \boxed{f(x) = 4(x-5)^2 - 2}$

3. (3 points) Let $f(x) = \frac{x+5}{2}$ and $g(x) = x^2 - 1$. Find $(f \circ g)(-3)$.

$(f \circ g)(-3) =$

$f(g(-3)) =$

$f\left((-3)^2 - 1\right) =$

$f(9-1) =$

$f(8) = \frac{8+5}{2} = \boxed{\frac{13}{2}}$

OR

$(f \circ g)(x) =$

$f(g(x)) =$

$f(x^2-1) =$

$\frac{x^2-1+5}{2} = \frac{x^2+4}{2}$

$\longrightarrow (f \circ g)(-3) =$

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

$\frac{9+4}{2} = \boxed{\frac{13}{2}}$