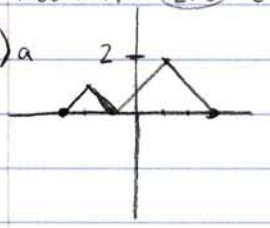
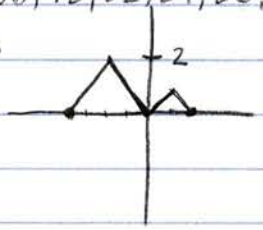
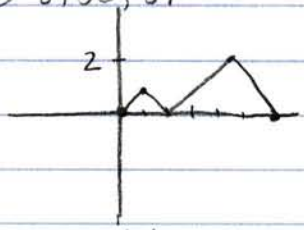
HW # 14 (2.5) 64, 66, 78, 82, 84, 86, 88 (2.6) 8, 30, 34

64) a 

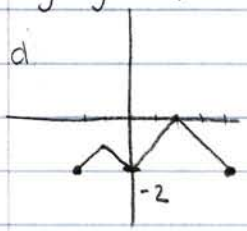
$y = g(x+1)$

b 

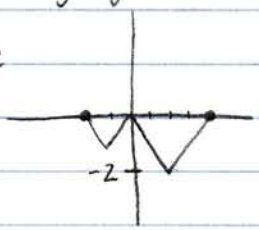
$y = g(-x)$

c 

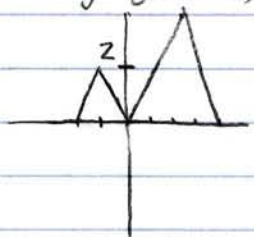
$y = g(x-2)$

d 

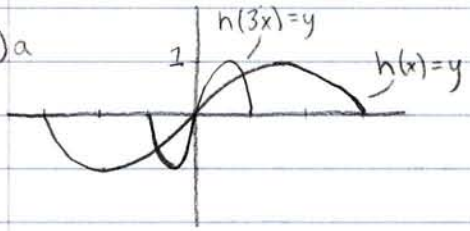
$y = g(x) - 2$

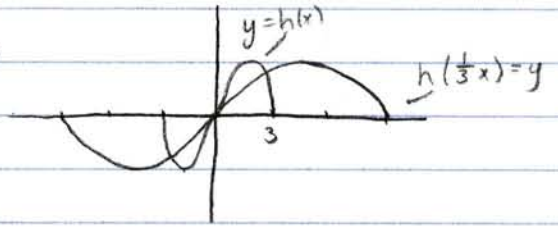
e 

$y = -g(x)$

f 

$y = 2g(x)$

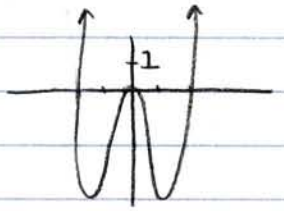
66) a 

b 

78) $f(x) = x^4 - 4x^2$

$f(-x) = (-x)^4 - 4(-x)^2$

$= x^4 - 4x^2$ so, $f(x)$ is even

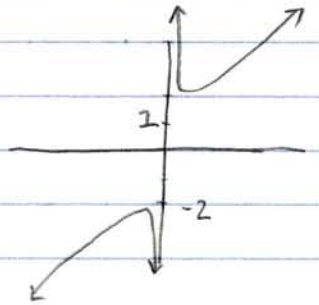


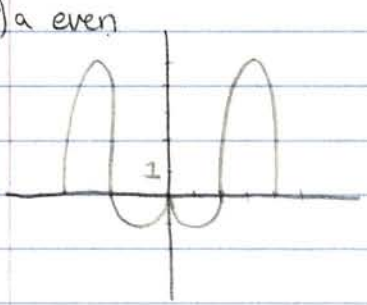
82) $f(x) = x + \frac{1}{x}$

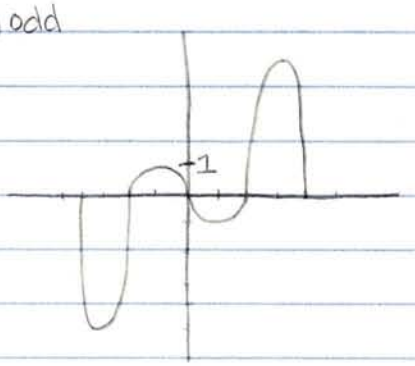
$f(-x) = -x + \frac{1}{-x}$

$= -x - \frac{1}{x}$

$= -\left(x + \frac{1}{x}\right)$ so, $f(x)$ is odd



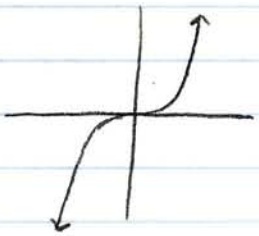
84) a even 

b) odd 

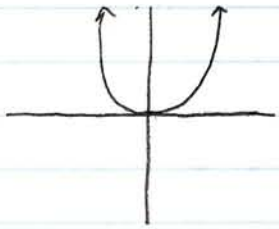
86, 88 (2.6) 8, 30, 34

86) $g(x) = |x^4 - 4x^2|$

88) a) $f(x) = x^3$



b) $f(x) = |x^3|$



(2.6)

8) $f(x) = \sqrt{9-x^2}$, $g(x) = \sqrt{x^2-4}$

$f(x)$ Domain: $[-3,3]$, $g(x)$ Domain: $(-\infty,-2]\cup[2,\infty)$

the intersection of those domains is $[-3,-2]\cup[2,3]$

$(f+g)(x) = \sqrt{9-x^2} + \sqrt{x^2-4}$ Domain: $[-3,-2]\cup[2,3]$

$(f-g)(x) = \sqrt{9-x^2} - \sqrt{x^2-4}$ Domain: $[-3,-2]\cup[2,3]$

$(fg)(x) = \sqrt{9-x^2}\cdot\sqrt{x^2-4} = \sqrt{-x^4+13x^2-36}$ Domain: $[-3,-2]\cup[2,3]$

$\left(\frac{f}{g}\right)(x) = \frac{\sqrt{9-x^2}}{\sqrt{x^2-4}} = \sqrt{\frac{9-x^2}{x^2-4}}$ Domain is $[-3,2)\cup(2,3]$

30) $(f\circ g)(0)$ $g(0) = 3$, so $(f\circ g)(0) = f(3) = \boxed{0}$

34) $f(x) = 6x - 5$ $g(x) = \frac{x}{2}$

$(f\circ g)(x) = f\left(\frac{x}{2}\right) = 6\left(\frac{x}{2}\right) - 5 = \boxed{3x-5}$

$(g\circ f)(x) = g(6x-5) = \frac{6x-5}{2} = \boxed{3x - \frac{5}{2}}$

$(f\circ f)(x) = f(6x-5) = 6(6x-5) - 5 = \boxed{36x-35}$

$(g\circ g)(x) = g\left(\frac{x}{2}\right) = \frac{\frac{x}{2}}{2} = \boxed{x/4}$

Domain: $(-\infty,\infty)$