Advanced Algebra

Unit 2: Family of Functions Assignment #7

I can find x and y intercepts

Notes:

To find the x intercept of a function you must solve	To find the y intercept of the function you must solve
0=f(x) You must use your algebraic skills to solve this	F(0) So enter the function into your calculator and do VARS(0)

Example problem: Find the x and y intercepts of y = $3(x-8)^3$-12

To find the x intercept you are solving 0=f(x)	To find the y intercept you are solving f(0)
0=$3(x-8)^3$ -12 12 = $3(x-8)^3$ I added 12 to both sides 4 = $(x-8)^3$ Divided both sides by 3 1.59 = x-8 Took the cube root of both sides 9.59 = x Added 8 to both sides **This is my x intercept (9.59,0)**	Enter the function into your calculator Do VARS (0) This gives us -1548 **So the y intercept is (0,-1548)**

Practice problems. For the following problems, find the x and y intercepts.

1) **f(x) = $2(x-4)^3$ + 6**

2) f(x)= $2|x - 6|$+8

3) f(x) = $\frac{1}{2}$(x+3$)^3$ − 2

4) f(x) = 6x-2

5) $f(x)=2(x-3)^2 + 8$

6) $f(x) = \frac{1}{4}x+4$

7) $f(x) = 3(x+5)^2 - 4$

8) $f(x)= -(x-2)^2+18$

9) $f(x) = (x-3)^{\frac{1}{3}}-2$

For the following problems, find f(g(x)) and g(f(x))

1) $f(x) = x+1$ and $g(x) = 2x$
2) $f(x) = 2x+1$ and $g(x) = x-3$
3) $f(x) = x^2$ and $g(x) = x-1$
4) $f(x) = x^2-1$ and $g(x) = x+2$
5) $f(x) = x-3$ and $g(x) = x+3$
6) $f(x) = -x^2 -1$ and $g(x) = x+5$
7) Find $f(x)$ and $g(x)$ such that $f(g(x)) = (x+1)^2$

#1) **f(g(x))**= f(2x) = **2x+1**   and **g(f(x))**= g(x+1)= 2(x+1)= **2x+2**