

Name _____
Date _____

Advanced Algebra
Unit 2: Families of Functions
Homework #8

1. Given $f(x) = 3x+2$ and $g(x) = 4x-6$
Find the following:

a. $f(g(3))$ $f(6)$ 20

b. $f(g(-2))$ $f(-14)$ -40

c. $g(f(4))$ $g(14)$ 50

d. $g(f(-3))$ $g(-7)$ -34

e. $f(g(x))$ $f(4x-6)$ $3(4x-6)+2$ $12x-16$
 $12x-18+2$

f. $g(f(x))$ $g(3x+2)$ $4(3x+2)-6$

2. **Given $y=x^3$**

a. For what x values is f(x) increasing? $12x+8-6$

All values $12x+2$

b. For what x values if f(x) decreasing?

none

x^3 IS Always increasing

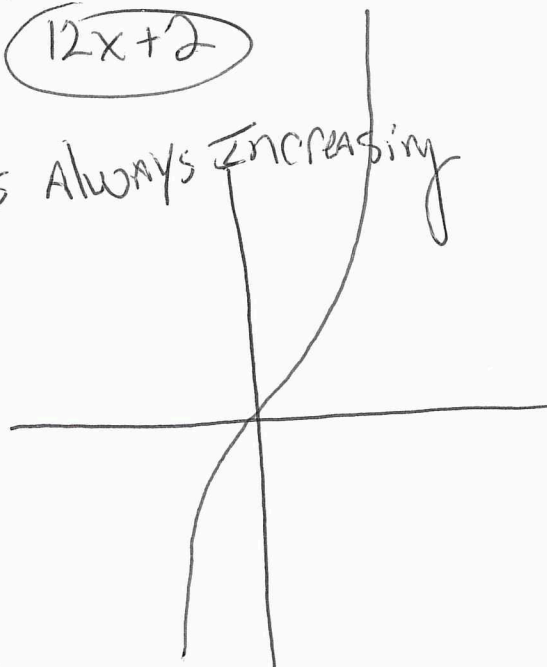
3. **Given $f(x) = 2x-2$ and $g(x) = x^2$**

Find the following:

a. $f(g(x))$

3a) $f(x^2)$ $2x^2-2$

$g(f(x))$ $(2x-2)^2$



I can find x and y intercepts:

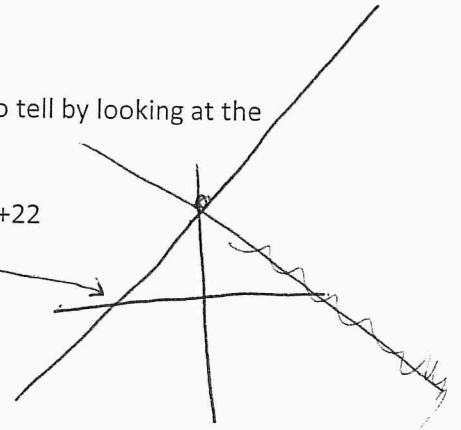
Find the x and y intercepts for the following functions. You should be able to tell by looking at the function if it DOES NOT have x intercepts.

1) $f(x) = 2(x-8)^2 + 25$

VARs (0)

2) $f(x) = \frac{1}{4}x + 22$

$(-88, 0)$



x intercept

none

y intercept

$(0, 153)$

x intercept

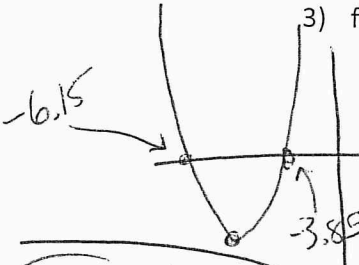
$(-88, 0)$

y intercept

$(0, 22)$

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

4) $f(x) = -(x-2)^3 + 18$



$-(x-2)^3 + 18 = 0$

$(x-2)^3 = 18$

$x-2 = 2.62$

$(4.62, 0)$

$-3.85 / -6.15$

x intercept

y intercept

$(0, 71)$

x intercept

$(4.62, 0)$

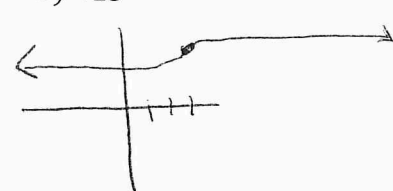
y intercept

$(0, 26)$

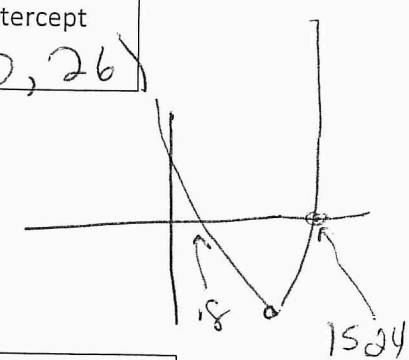
$x = -5 \pm \sqrt{\frac{4}{3}}$
 -5 ± 1.15

5) $f(x) = (x-3)^{\frac{1}{3}} + 18$

6) $f(x) = 2(x-8)^2 - 105$



$2(x-8)^2 = 105$
 $x-8 = \pm 7.2$



x intercept

$(.379, 0)$

y intercept

$(0, 16.56)$

x intercept

$15.24 / .8$

y intercept

$(0, 23)$

$(x-3)^{\frac{1}{3}} = -18$
 $x-3 = -2.62$
 $x = .379$

$3|x-6| - 18 = 0$

$|x-6| = 6$

$x-6 = 6$ $x-6 = -6$

$x = 12$ $x = 0$

x intercepts

y intercepts

x intercept
 $(4, 0)$

y intercept
 $(0, -3.17)$