Precalc Review Sections 4.1 - 4.5 **Name:**_____
Date:_____

Given the following functions complete the following:

$f(x) = 3x^2$ $g(x) = 5x$ $h(x) = \sqrt{x-4}$ $k(x) = x^2 - 1$

1) $g(f(h(1)))$ 2) $f(g(x))$ 3) $h(k(x))$

4) $(f+g)(x)$ 5) $(g-k)(x)$ 6) $(f*g)(x)$

7) $h(g(k(x)))$ 8) $(\frac{f}{k})(x)$

9) Write the composition for the rules given.

a) $\sqrt{3(x^2-1)^2} - 4$ b) $5(\sqrt{x^2-5})$

Given the function as shown, draw a sketch of each of the following:

10) $y = f(x+2) - 1$

11) $y = f(-x)$

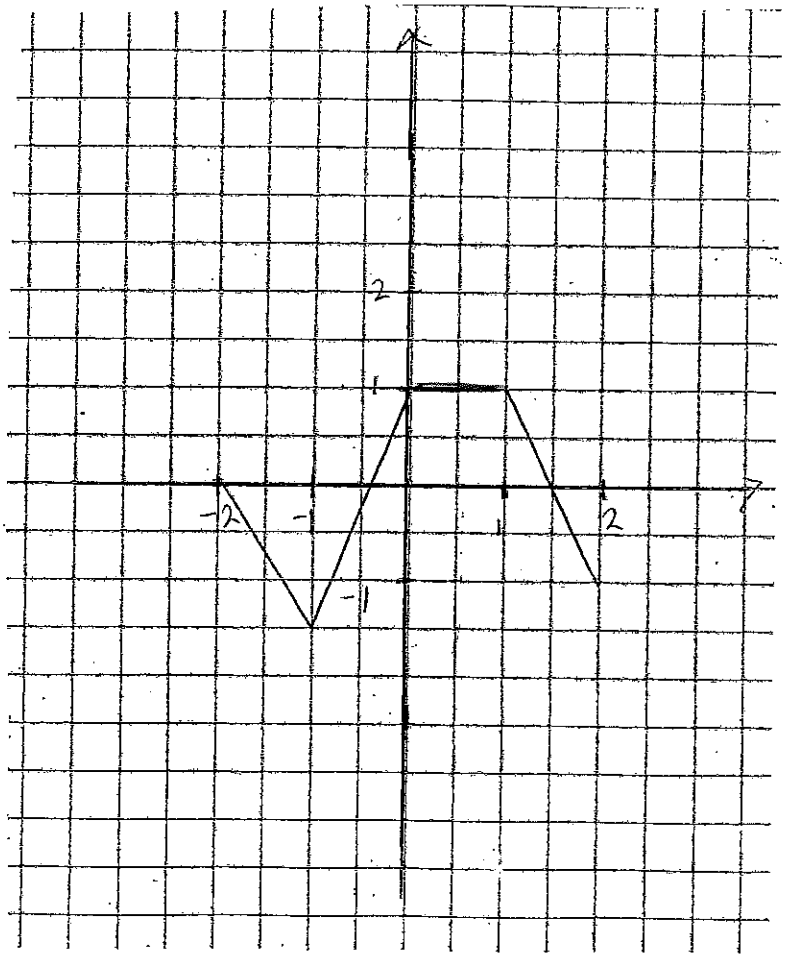
12) $y = -f(x)$

13) $y = |f(x)|$

14) $y = -f(-x)$

15) $x = f(y)$

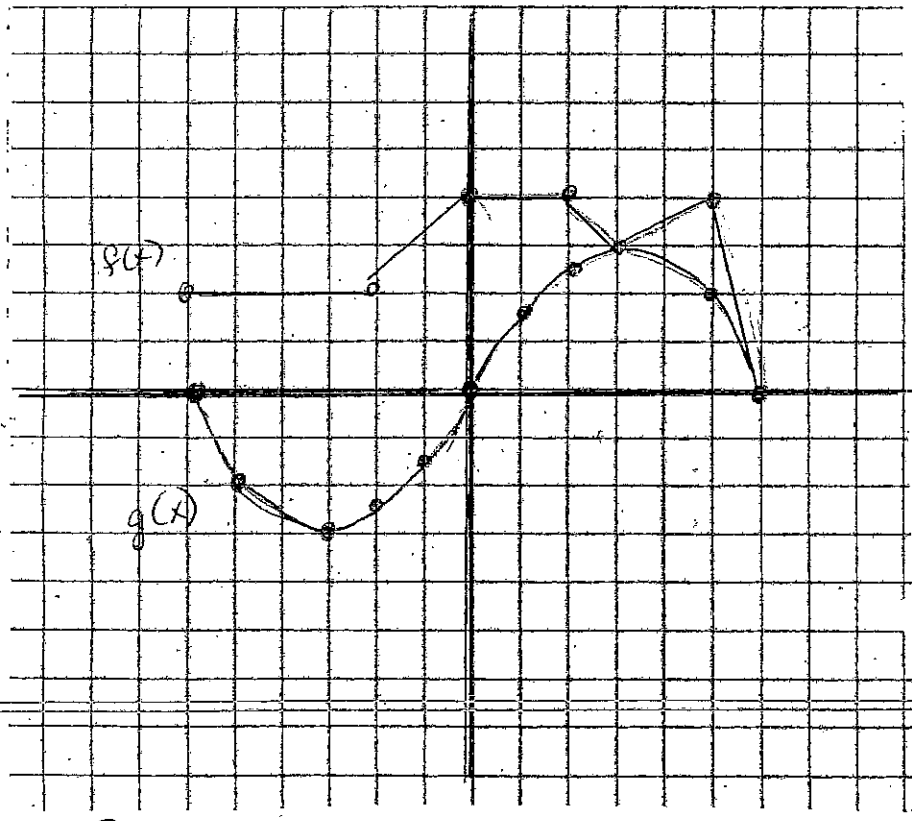
16) $y = -|f(x)|$



Given the graphs of f(x) and g(x)
Graph the following:

17) (f+g) (x)

18) (f - g)(x)

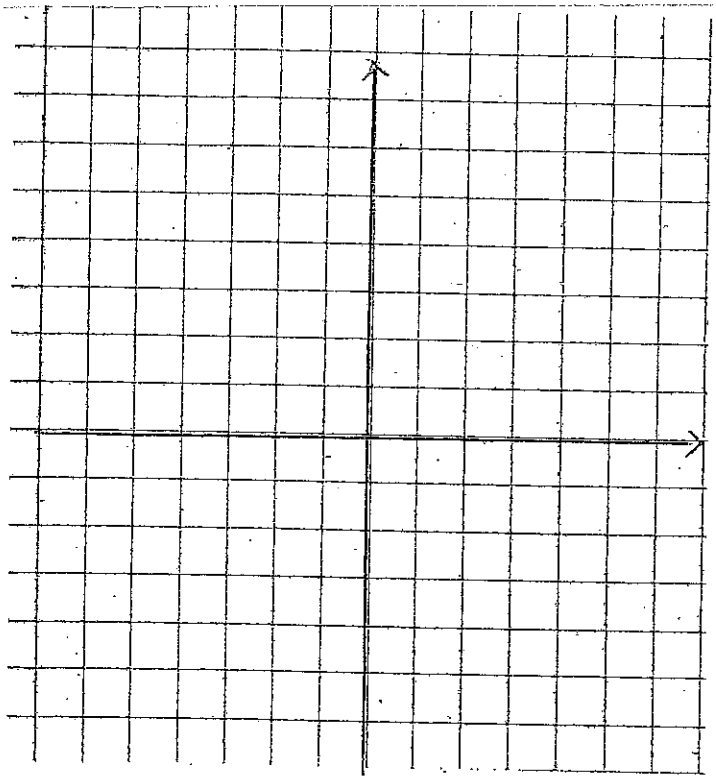


19) Given the function $y = 3x - 2$

a) Graph the function.

b) Graph the reflection of the function over the line $y = x$.

c) Write the equation of the reflection in the form of y in terms of x.



20) The Area of a circle and Volume a sphere are given in terms of the radius/height by the formulas:

$A = \pi r^2$

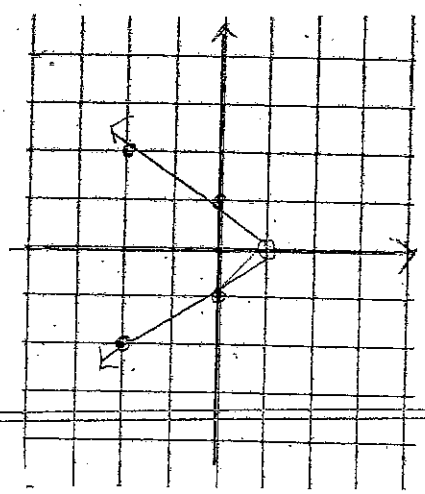
$V = \frac{4}{3}\pi r^3$

a) Express r as a function of A.

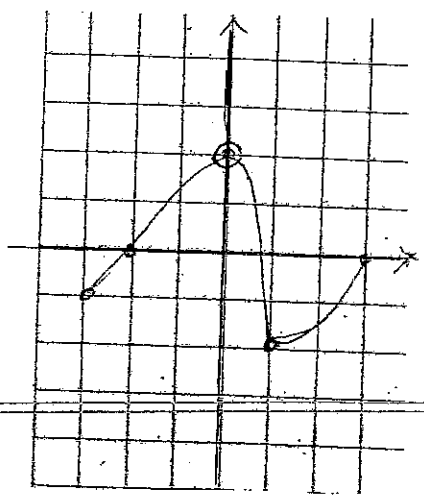
b) Express V as a function of A,

21) Determine if the following are functions. State the domain and range.

a)



b)



22) Give the domain, range, and zeros of the functions given.

a) $y = x^2 + 5x + 4$

b) $y = \sqrt{x^2 - 4}$

23) Determine the symmetry points of each of the following functions.

a) $y = 3x^2 - 12x + 1$

b) $y = 2x^3 + 24x^2 + 5x - 2$

24) Verify that the equation has symmetry in the following: (Show your work)

a) Symmetry in the x-axis. $y^4x = 1$

b) Symmetry in the y-axis $y = x^6$

c) Symmetry in the line $y = x$ $x^2 + y^2 = 1$

d) Symmetry in the origin $y = x^5$

Graph the following functions. Include baseline graphs. State domain & range.

25) $f(x) = \frac{1}{3}|x-2|-3$

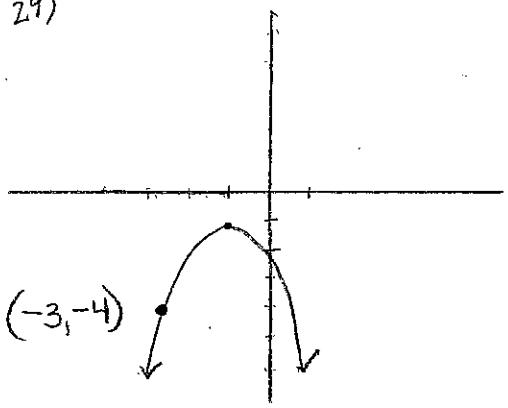
26) $f(x) = -\sqrt{x+3}+4$

27) $f(x) = (x-1)^3+2$

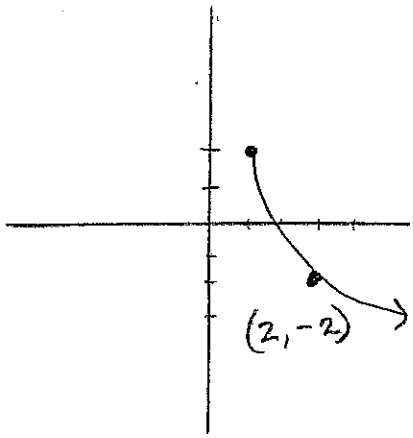
28) $f(x) = -(x+2)^2+3$

Write equation based upon graph

29)



30)



31) Suppose a function f has an inverse. If $f(3)=7$ and $f(10)=13$, find:

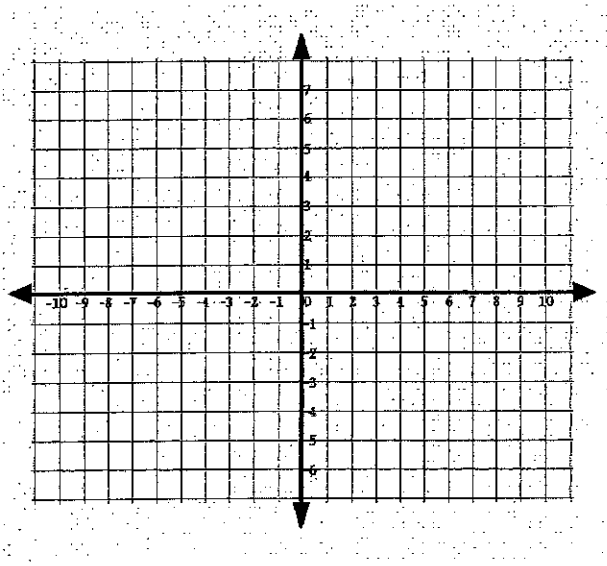
$a) f^{-1}(7)$

$b) f^{-1}(f(10))$

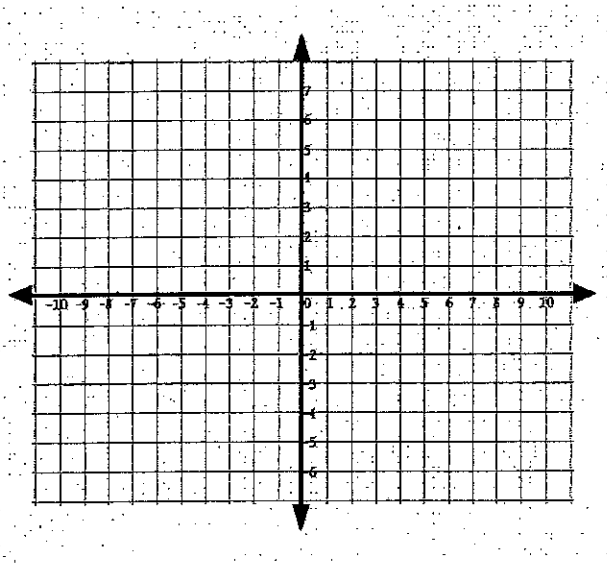
$c) f(f^{-1}(13))$

32) Find the inverse of g(x) and sketch the graph of g(x) and its inverse.

$a) g(x)=(x-3)^2+1, \quad x \le 3$



$b) g(x)=1-x^2, \quad x \ge 0$



33) FIND THE PERIOD, AMPLITUDE AND VALUE OF

$f(2013)$