

AP CALCULUS SUMMER ASSIGNMENT:

NAME _____

1. Find the value of x that corresponds to $y = 3$ in $y = 3 - 2(x + 1)$

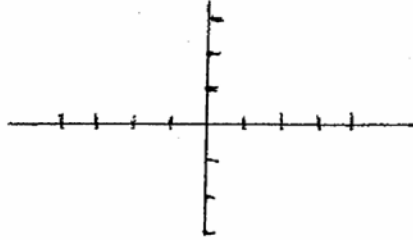
1) _____

2. Find the distance between the points $(2, 1)$ and $(1, \frac{-1}{3})$

2) _____

3. Let L be the line determined by points $A(-2, -1)$ and $B(1, -2)$

- a) Plot A and B
- b) Draw the graph of L
- c) Find the slope of L



3) slope = _____

4. Given $P(2, 3)$. Write the equation for the vertical line and the horizontal line through the point P .

4) Hor. _____
Ver. _____

5. Write the point-slope equation for the line through $P(-1, 1)$ with the slope of -1 .

5) _____

6) Write a general linear equation for the line through the two points $(-2, 1)$ and $(2, -2)$

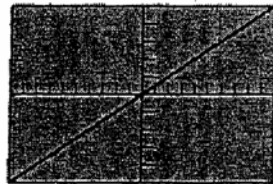
6) _____

7) Write the slope-intercept equation for the line with y int. $(0, -3)$ and slope $\frac{-1}{2}$.

7) _____

8) The line contains the origin and the point in the upper right corner on the grapher screen. Write an equation for the line.

8) _____

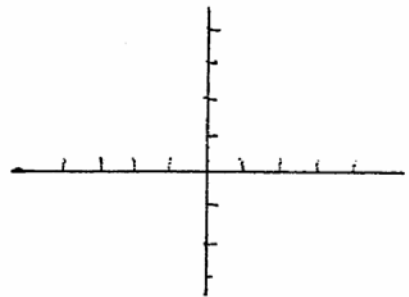


$[-10, 10]$ by $[-25, 25]$

9) Find the slope and the y intercept and graph the line.

$3x + 4y = 12$

slope = _____
 y int (_____)

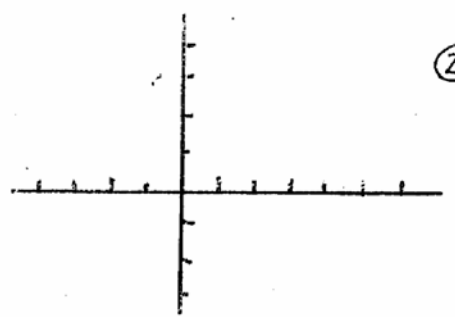


10) Find the slope and the y intercept and graph the line.

$$\frac{x}{3} + \frac{y}{4} = 1$$

slope = _____

y int ()



11) Write an equation of the line through P (-2,4) and perpendicular to x = 5 and is parallel to x = 5.

11) parallel _____
perp. _____

12) A table of values is given for the linear function $f(x) = mx + b$. Determine the values of m and b.

x	f(x)
1	2
3	9
5	16

12) m = _____
b = _____

13) Find the value of y for which the line through A (-2,3) and B (4,y) has a slope of $\frac{-2}{3}$.

13) y = _____

14) For what value of k are the lines $2x + ky = 3$ and $x + y = 1$ parallel? perpendicular?

14) par. K = _____
per. K = _____

15) The pressure "p" experienced by a diver under water is related to the diver's depth "d" by an equation of the form $p = kd + 1$ where "k" is a constant. When $d = 0$ meters, the pressure is 1 atmosphere. The pressure at 100 meters is 10.94 atmospheres. Find the pressure at 50 meters.

15) Pressure _____

16) Consider the circle of radius 5 which is centered at (0,0). Find the equation of the line tangent to the circle at (3,4).

16) _____

Solve for x in the following problems:

17) $3x - 1 \leq 5x + 3$

18) $x(x - 2) > 0$

19) $|x - 3| \leq 4$

20) $|x - 2| \geq 5$

21) $X^2 < 16$

22) $9 - X^2 \geq 0$

In the next two problems, describe how the graph of "f" can be transformed to the graph of "g".

23) $f(x) = x^2$ and $g(x) = (x+2)^2 - 3$

24) $f(x) = |x|$ and $g(x) = |x-5| + 2$

In the following problems, find all real solutions to the equations:

25) $f(x) = x^2 - 5$

26) $f(x) = \frac{1}{x}$

a) when $f(x) = 4$

b) when $f(x) = -6$

a) when $f(x) = -5$

b) when $f(x) = 0$

27) $f(x) = \sqrt{x+7}$

28) $f(x) = \sqrt[3]{x-1}$

a) when $f(x) = 4$

b) when $f(x) = 1$

a) when $f(x) = -2$

b) when $f(x) = 3$

29) Write a formula that expresses the first variable as a function of the second variable.
 "The surface area of a cube as a function of the length of the cube's edges."

29) _____

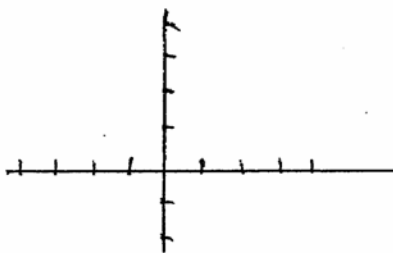
In the next five problems, find the domain, the range, draw the graph and determine if it has x axis, y axis, origin or $y = x$ symmetry.

30) $y = 2 + \sqrt{x-1}$

Domain _____

Range _____

Symmetry _____

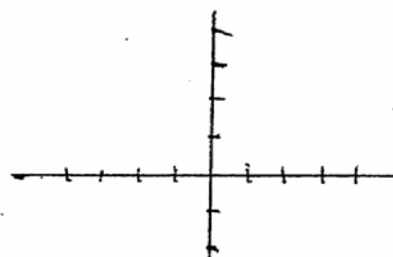


31) $y = 2\sqrt{3-x}$

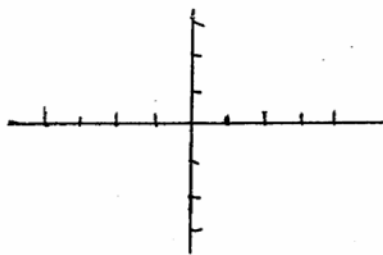
Domain _____

Range _____

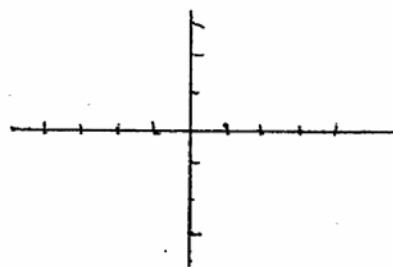
Symmetry _____



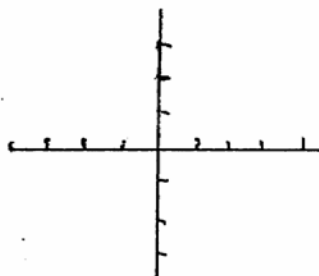
32) $y = \sqrt[3]{x-3}$
 Domain _____
 Range _____
 Symmetry _____



33) $y = \sqrt[4]{-x}$
 Domain _____
 Range _____
 Symmetry _____



34) $y = \sqrt{4-x^2}$
 Domain _____
 Range _____
 Symmetry _____



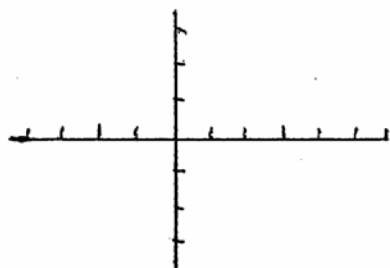
Determine whether or not the function is odd or even or neither.

35) $y = \sqrt{x^2+2}$ 35) _____

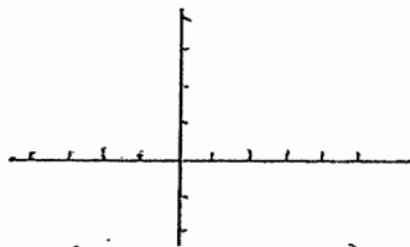
36) $y = \frac{1}{x-1}$ 36) _____

For the next four problems, draw a graph and state the domain and range.

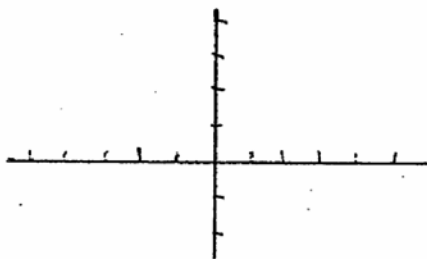
37) $f(x) = -|3-x|+2$
 Domain _____
 Range _____



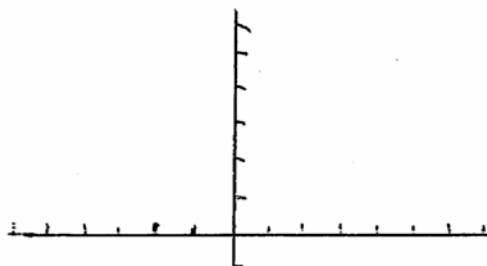
38) $f(x) = \begin{cases} 3-x, & x \leq 1 \\ 2x, & 1 < x \end{cases}$
 Domain _____
 Range _____



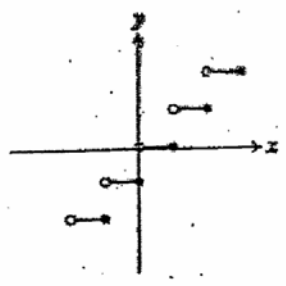
39) $f(x) = \begin{cases} 1, & x < 0 \\ \sqrt{x}, & x \geq 0 \end{cases}$
 Domain _____
 Range _____



40) $f(x) = \begin{cases} 4-x^2, & x < 1 \\ \frac{3}{2}x + \frac{3}{2}, & 1 \leq x \leq 3 \\ x+3, & x > 3 \end{cases}$
 Domain _____
 Range _____

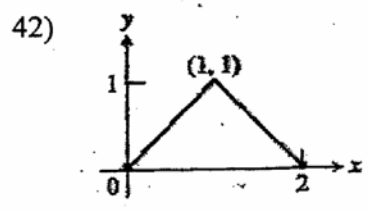


41) Use the vertical line test to determine whether the curve is the graph of a function.

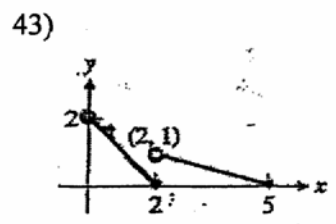


41) _____

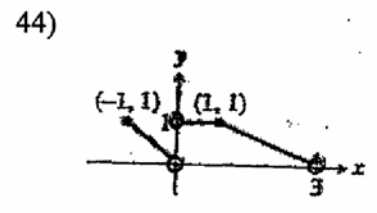
In the following three problems, determine the piecewise formula for each function.



$$f(x) = \left\{ \begin{array}{l} \\ \\ \end{array} \right.$$



$$f(x) = \left\{ \begin{array}{l} \\ \\ \end{array} \right.$$

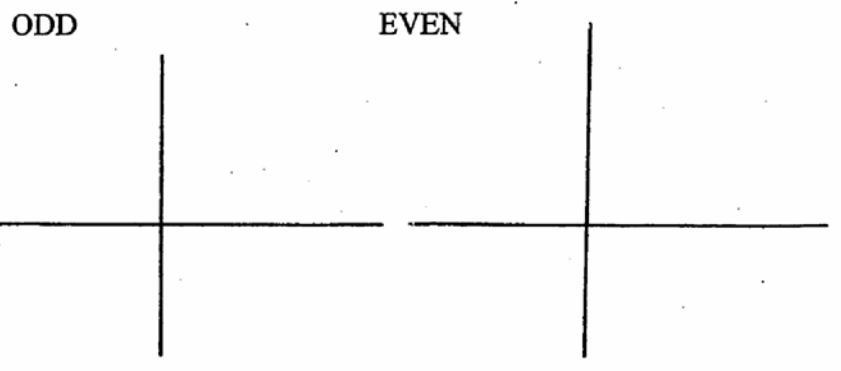
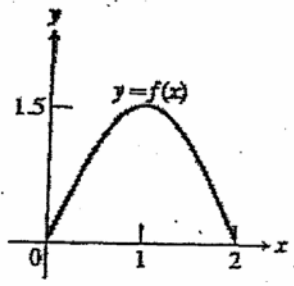


$$f(x) = \left\{ \begin{array}{l} \\ \\ \end{array} \right.$$

45) Given: $f(x) = x + 5$ and $g(x) = x^2 - 3$ Find: $f(g(x)) =$ _____
 $g(f(x)) =$ _____
 $f(g(0)) =$ _____
 $g(f(0)) =$ _____
 $g(g(-2)) =$ _____
 $f(f(x)) =$ _____

46) $f(x) = \frac{2}{\sqrt[3]{9-x^2}}$ Domain _____ Range _____

47) This is a portion of a graph of a function. Complete the graph if the function is.....



Evaluate the following three problems. Round off answers to 3 decimal places.

48) $5^{\frac{2}{3}} =$ _____

49) $3^{\sqrt{2}} =$ _____

50) $3^{-1.5} =$ _____

Solve the following three equations. Round off your answer to 4 decimal places.

51) $x^3 = 17$

52) $x^5 = 24$

53) $x^{10} = 1.4567$

$x =$ _____

$x =$ _____

$x =$ _____

Simplify the exponential expressions:

54) $\frac{(x^{-3}y^2)^2}{(x^4y^3)^3} =$ _____

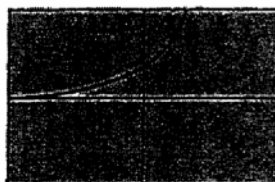
55) $\left(\frac{a^3b^{-2}}{c^4}\right)^2 \left(\frac{a^4c^{-2}}{b^3}\right)^{-1} =$ _____

Match the following functions with their graphs. Do it without using your calculator.

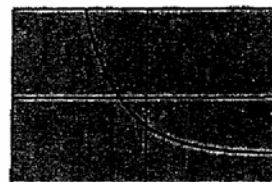
56) $y = 2^x$ _____

57) $y = -3^{-x}$ _____

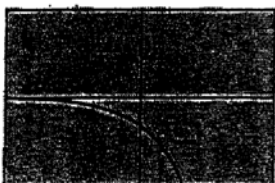
58) $y = 2^{-x} - 2$ _____



(a)



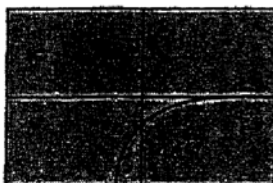
(b)



(c)



(d)



(e)



(f)

For the following functions, graph the function and state its domain, range and intercepts.

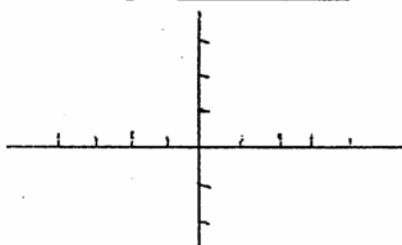
59) $y = -2^x + 3$

60) $y = 3e^{-x} - 2$

Domain _____

Range _____

Intercepts _____



Domain _____

Range _____

Intercepts _____

