Review for Test over Functions

1. For the function $h(x) = x^2 - 4$ over the **domain** {■, 0, 1, 2, 3}
   a. State the **RANGE** of h. $\{-4, -3, 0, 5\}$
   b. Find $h(-9)$ $(-9)^2 - 4 = 81 - 4 = 77$
   c. If $h(x) = 12$, what is x? $x^2 - 4 = 12$ $x^2 = 16$ $4, -4$
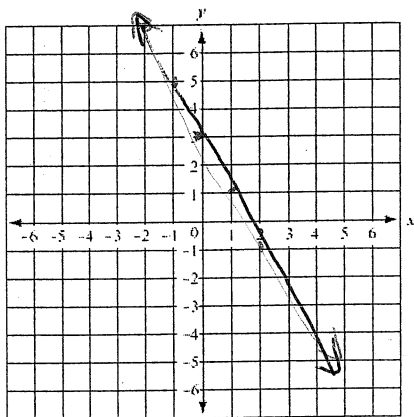   d. The graph of this function is a _parabola_ .
   e. The graph opens upward/downward.
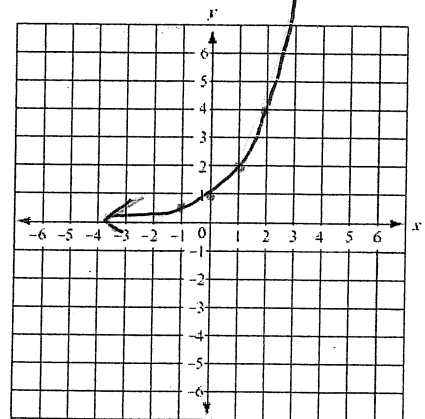   f. The axis of symmetry is the line x = $\frac{-b}{2a} = 0$.
   g. The coordinate of the vertex is $(0, -4)$.
   h. The graph has a minimum/maximum.

2. Graph the function $f(x) = -2x + 3$

3. Graph the function $f(x) = 2^x$

x	y
-1	½
0	1
1	2
2	4
3	8

4. Graph the function $g:x \to x^2 + 2x - 3$

$4 + 4 - 3$
$1 + 2 - 3$

   a. Make sure to label the vertex.
   b. Draw in the axis of symmetry.
   c. Include six other points.

$X = \frac{-2}{2(1)} = -1$ vertex $(-1, -4)$
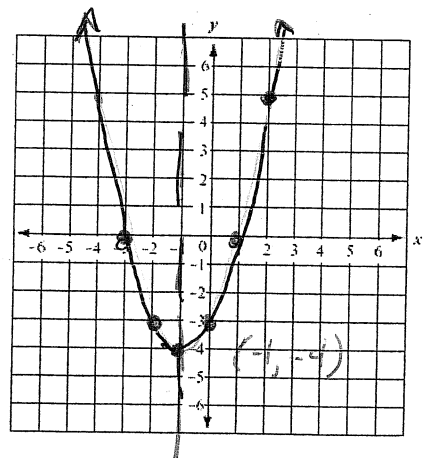
x	y
0	-3
-2	-3
1	0
2	5
-4	5

4½. $-3(x-4)^2 + 1$

a $(4, 1)$

b. reflected
   stretched vertically
   right 4
   up 1

$(4, -4)$

5. m varies directly as n.
   a. Write a formula in terms of m, n, and k. $m = kn$
   b. If m = 18, when n = 3, find the value of k. $18 = k \cdot 3$
   $k = 6$
   c. Find m when n = 9.
   $m = 6 \cdot 9$
   $m = 54$

6. The number of tickets bought is directly proportional to the cost paid. If 3 tickets cost $51.75, what is the cost of 8 tickets? $\dfrac{3}{51.75} = \dfrac{8}{x}$ #138

7. a varies inversely as b.
   a. Write a formula in terms of a, b, and k. $ab = k$
   b. If a = 18, when b = 3, find the value of k. $18 \cdot 3 = k$
   $54 = k$
   c. Find a when b = 9.

8. The time it takes to paint a fence is inversely proportional to the number of painters. If 12 painters can paint the fence in 6 hours, how long will it take 9 painters?
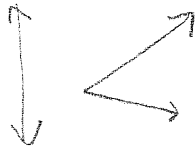 $12 \cdot 6 = 9h$
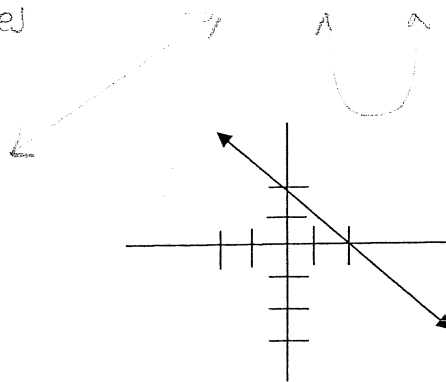 $\dfrac{72}{8} = 9h$
   $8 = h$

9. Draw a sketch of graph that is a function and one that is not.
   no   yes

10. Write an equation for each relation.

X	2	+1	3		4	+2	6
y	5	+3	8		11	+4	17

   $y = 3x - 1$

   $y = -x + 2$

11. Solve the exponential function.
   a. $8^{3x} = 8^{x-1}$
   $3x = x - 1$
   $2x = -1$
   $x = -\dfrac{1}{2}$

   b. $8^x = 32^{4x}$
   $(2^3)^x = (2^5)^{4x}$
   $3x = 20x$
   $0 = 17x$
   $0 = x$

12. If you invest $5000 that earns 2.2% interest, how much will you have at the end of 7 years?
   $5000(1 + .022)^7 = 5822.70$ just growth $a(1+r)^t$
   $5000\left(1 + \dfrac{.022}{n}\right)^{7n}$ it does not say "compound" so you would not use this