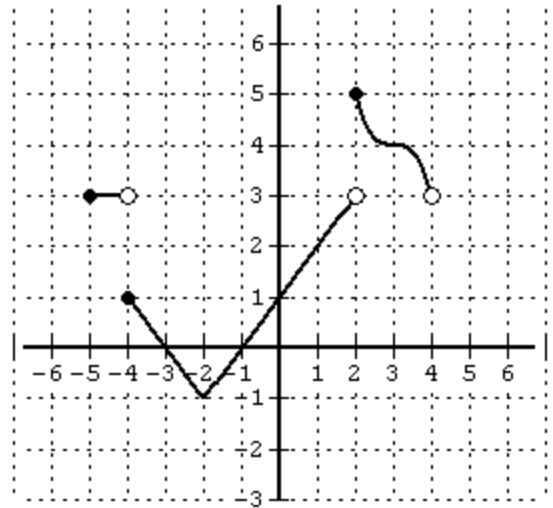


MAC1105 College Algebra Sample Test 2 KEY

1) Use the graph to the right to answer questions A – S.

- A) Is the graph a function? Yes / No **YES**
- B) Domain: $[-5, 4)$
- C) Range: $[-1, 5]$
- D) x -intercept(s): $-3, -1$
- E) y -intercept: 1
- F) Absolute Maximum value: 5
- G) Absolute Minimum value: -1



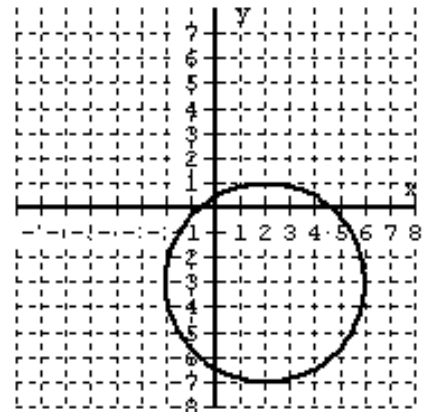
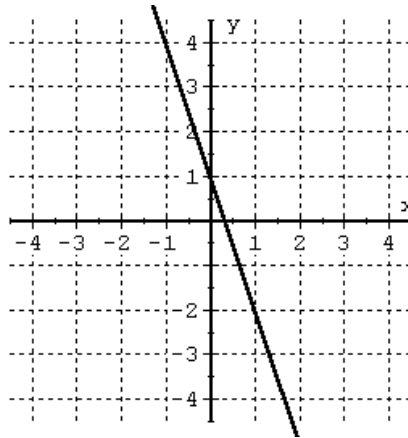
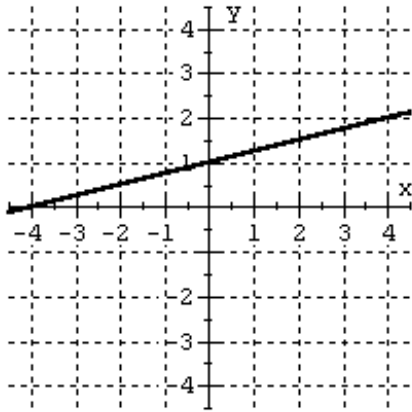
For items H – L, State the corresponding x-values using Interval Notation.

- H) Where is the graph increasing? $(-2, 2)$
 - I) Where is the graph decreasing? $(-4, -2) \cup (2, 4)$
 - J) Where is the graph constant? $(-5, -4)$
 - K) Where is $f(x) > 0$? $[-5, -3) \cup (-1, 4)$
 - L) Where is $f(x) \leq 0$? $[-3, -1]$
-
- M) How many times does the line $y = 1$ intersect the graph? 2 times
 - N) Find $f(3) = 4$
 - O) Find $f(-4) = 1$
 - P) Find $f(2) = 5$
 - Q) Where does $f(x) = 0$? List the corresponding value(s) of x . $-3, -1$
 - R) Where does $f(x) = 4$? List the corresponding value(s) of x . $x = 3$

S) Find a piecewise-defined function for the function graphed above:

$$f(x) = \begin{cases} 3 & \text{for } -5 \leq x < -4 \\ |x + 2| - 1 & \text{for } -4 \leq x < 2 \\ -(x - 3)^3 + 4 & \text{for } 2 \leq x < 4 \end{cases}$$

Find an equation of each of the following Lines

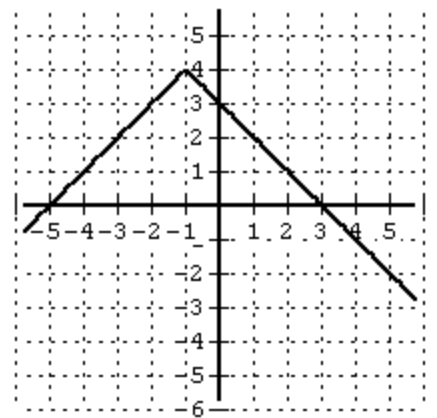
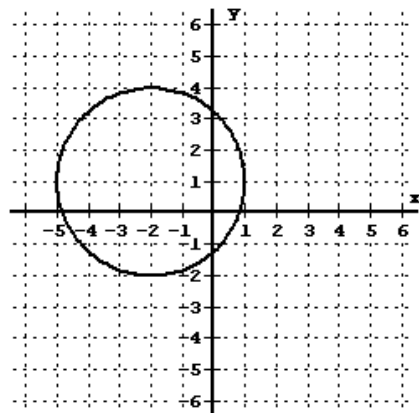
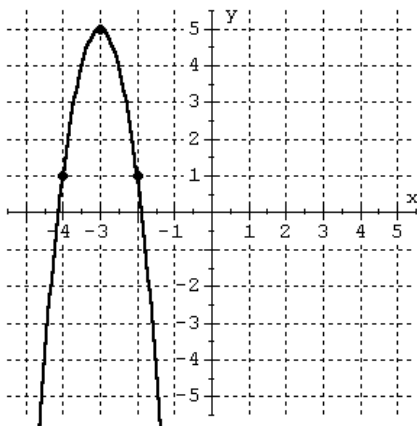


2) $y = \frac{1}{4}x + 1$

3) $y = -3x + 1$

4) Graph $(x - 2)^2 + (y + 3)^2 = 16$

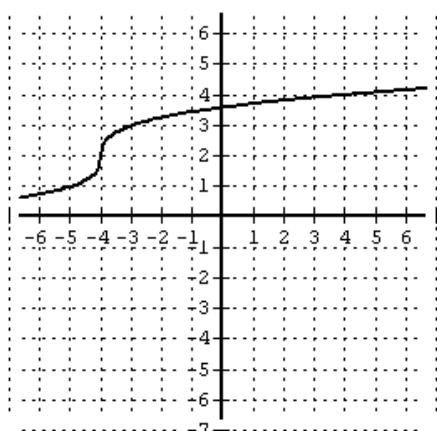
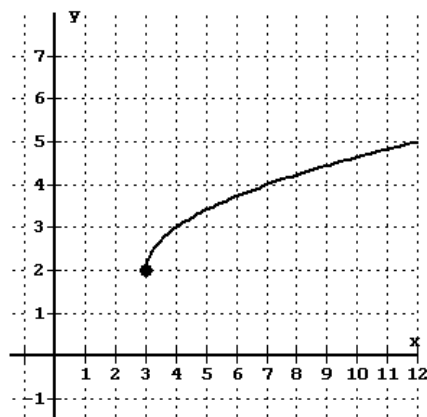
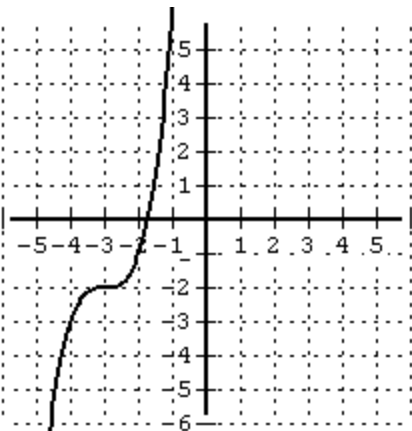
Find an equation of each of the following transformed parent functions



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

6) $(x + 2)^2 + (y - 1)^2 = 9$

7) $y = -|x + 1| + 4$



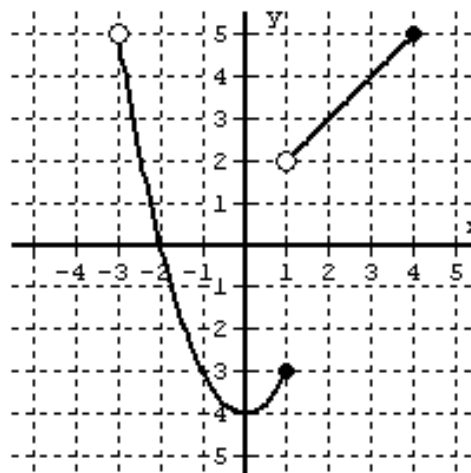
8) $y = (x + 3)^3 - 2$

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

10) $y = \sqrt[3]{x + 4} + 2$

- 11) Is $f(x) = x^6 + 3$ symmetric about the y-axis? A) YES
 B) Is $f(x) = \sqrt[3]{x}$ symmetric about the origin? B) YES
 C) Is $f(x) = x^2 - 1$ symmetric about the x-axis? C) NO
 D) Is $f(x) = (x - 3)^2$ an even function? D) NO
 E) Is $f(x) = x^3 - x$ an odd function? E) YES

12) Graph $f(x) = \begin{cases} x^2 - 4 & \text{for } -3 < x \leq 1 \\ x + 1 & \text{for } 1 < x \leq 4 \end{cases}$



- 13) Let $f(x) = x^2 + 3x + 5$ and $g(x) = 3x - 2$. Find the following:

A) $2f(1) + g(4) = 28$

B) $f(g(2)) = 33$

C) $(g \circ f)(0) = 13$

D) $(f \circ g)(x) = 9x^2 - 3x + 3$

14) Difference Quotient = $\frac{f(x+h) - f(x)}{h}$

Find the Difference Quotient of $f(x) = x^2 + 3$

$$\frac{f(x+h) - f(x)}{h} = 2x + h$$