

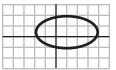
Name: _____

1-A Functions

1. Show that each of the following relations are not functions by choosing an x -value for each that would result in more than one y -value.

a) $y = \pm\sqrt{x+1}$ If x is _____, y could be _____ or _____.

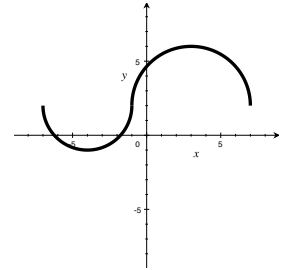
b) $y = x$'s science class If x is _____, y could be _____ or _____.

c)  If x is _____, y could be _____ or _____.

1-B Domain and Range

2. Fill in the blanks to state the domain and range of the graph at right.

a) domain: $\{x \mid ______ \leq x \leq ______\}$ b) range: $\{y \mid ______ \leq y \leq ______\}$



3. State the domain of the following functions.

a) $a(x) = 5x$

b) $b(x) = 4x^3 - 2x + 10$

c) $c(x) = \sqrt{2x+8}$

d) $d(x) = (x-5)^{1/4}$

e) $e(x) = (x-5)^{1/3}$

f) $f(x) = \log_5 x$

g) $g(x) = \frac{4x-3}{2x-50}$

h) $h(x) = \frac{4x-3}{2x^2-50}$

i) $i(x) = \log(x^2-25)$

1-C Composition and Inverses

4. Let $a(x) = 2x + 1$ and $b(x) = 3x^2 + 8x - 10$. Give a value or expression for each of the following.

a) $(a \circ b)(2)$

b) $a(b(x))$

c) $b(a(x))$

5. Let $f(x) = x/4$ be the number of pizzas needed to feed x boy scouts.

a) Give an equation for $f^{-1}(x)$.

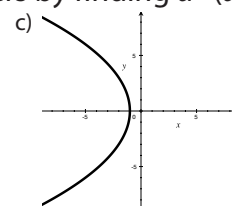
b) Calculate $f(20)$ and explain what it means.

c) Calculate $f^{-1}(20)$ and explain what it means.

6. Find the inverse of the following relations. Check your first two answers by finding $a^{-1}(a(x))$ and $b^{-1}(b(x))$.

a) $a(x) = 5x + 20$

b) $b(x) = x^7$



1-D Calculator Input and Output

7. Type each of the following expressions as a single line in the calculator. Round your answer to three significant figures.

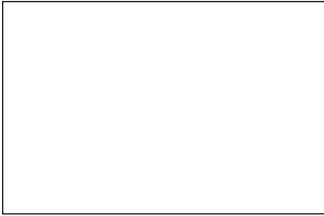
a) $\frac{-b - \sqrt{b^2 - 4ac}}{2a}$, given $a = -2$, $b = -9$, and $c = 20$

b) -0.2^{16}

8. For each of the following, fill in the blanks for the calculator's window range, and copy the graph.

a) Graph the equations $y_1 = -x + 2$ and $y_2 = x^2 + 3x - 6$ with window range $-5 \leq x \leq 5$ and $-50 \leq y \leq 50$.

b) Choose a window range for the equation $f(x) = (x - 34)^2 + 210$ that shows the vertex.

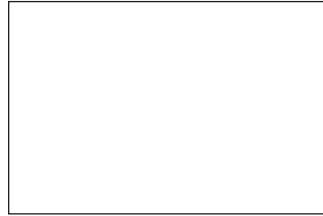


Xmin= _____

Xmax= _____

Ymin= _____

Ymax= _____



Xmin= _____

Xmax= _____

Ymin= _____

Ymax= _____

1-E Transformation of Functions

9. Write the equation the pre-image $f(x) = 3x^2 + 5x + 1$ transformed as stated.

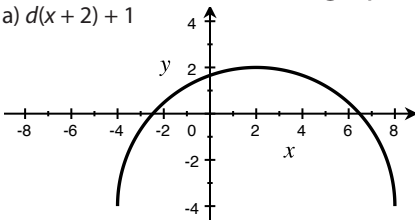
a) translated right 4 units and up 8 units

b) reflected across the y-axis

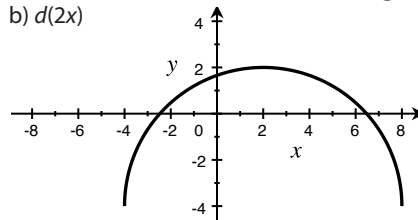
c) stretched horizontally by a factor of 2

10. Given the semicircle graph of $d(x)$ shown, sketch the following.

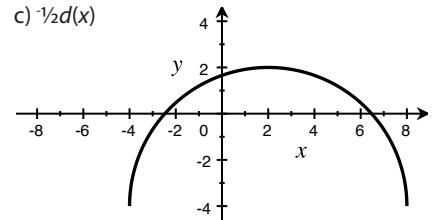
a) $d(x + 2) + 1$



b) $d(2x)$



c) $\frac{1}{2}d(x)$

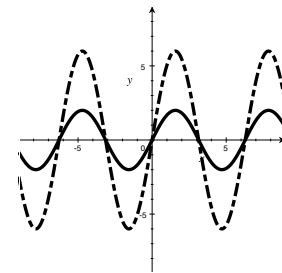
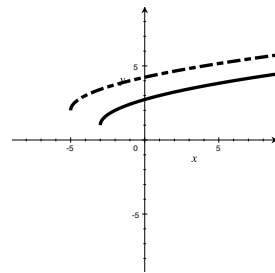
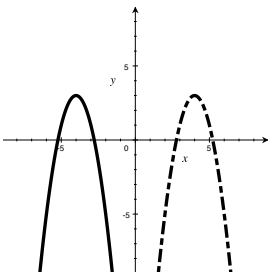


11. Write the equation of the dotted graph given the provided equation for the solid graph.

a) $a(x) = -2x^2 - 16x - 29$

b) $b(x) = \sqrt{x+2} + 1$

c) $c(x) = 2 \sin x$



1-F Quadratics

12. Find the vertex of each of the following parabolas.

a) $y = -2(x + 5)^2 + 9$

b) $y = 6x^2 + 60x - 1$

c) $y = 2(x + 7)(x - 3)$

13. Solve.

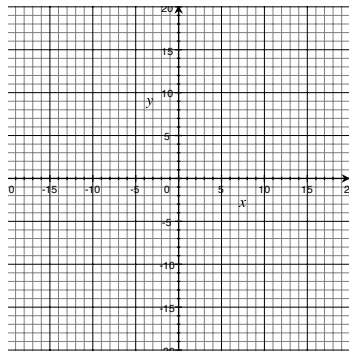
a) $x^2 + 10x + 21 = 0$

b) $x^2 + 10x + 21 = 5$

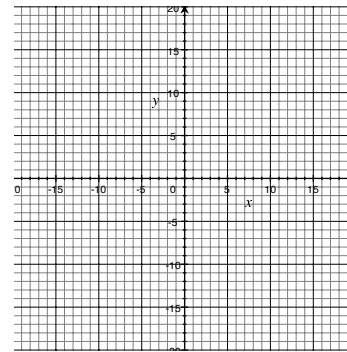
c) $3x^2 + 14x + 21 = 5$

14. Use the discriminant to state the number of x -intercepts. Then sketch.

a) $y = x^2 - 8x - 20$



b) $y = 2x^2 + x + 4$



15. Write the equation of the parabola shown below.

