1 Interval Notation

A.) Which set of integers is included in (–1,3]?

(1) {0, 1, 2, 3}
(2) {–1, 0, 1, 2}
(3) {–1, 0, 1, 2, 3, 4}
(4) {–2, –1, 0, 1, 2, 3}

B.) Graph the solution set on the number line.

C.) Is -1 included in the solution. Explain.

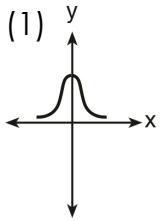
2 Functions

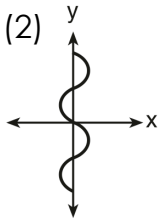
A. Which set is a function?

(1) {(3, 4), (3, 5), (3, 6), (3, 7)}
(2) {(1, 2), (3, 4), (4, 3), (2, 1)}
(3) {(6, 7), (7, 8), (8, 9), (6, 5)}
(4) {(0, 2), (3, 4), (0, 8), (5, 6)}

B. Given the function, $f(n) = (n - 1)^2 + 3n$, find f(3).

C. Which graph represents a function?

(1)


(2)


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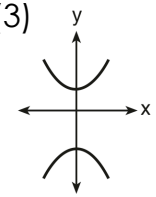

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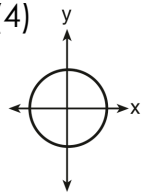
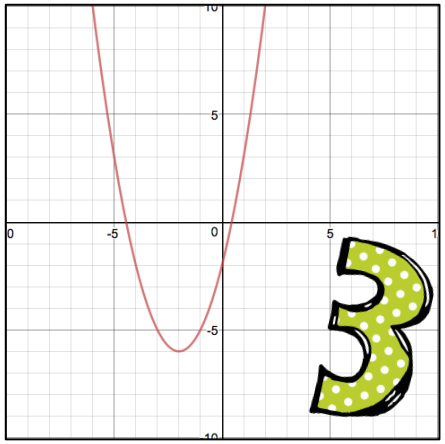


Making Connections

A.) Write the equation of the function shown in the graph in vertex form and standard form.

B.) Using the equation found in part A, find the zeros.

C.) State the domain and range of the function shown in the graph below.



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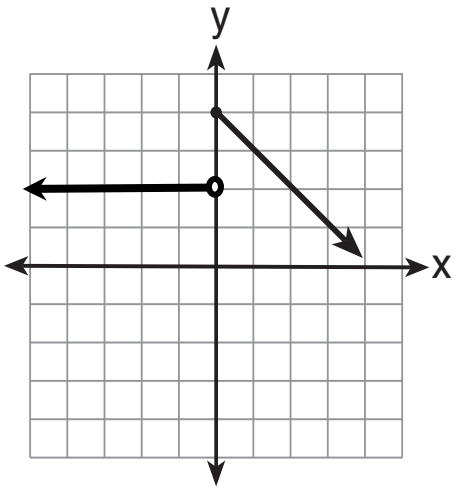
Tying the Pieces together

Write the piecewise function for the graph below. Explain how you arrived at the answer.



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Incognito

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a.

If $k = am + 3mx$, the value of m in terms of a, k, and x can be expressed as

(1) $\frac{k}{a + 3x}$

(2) $\frac{k - 3mx}{a}$

(3) $\frac{k - am}{3x}$

(4) $\frac{k - a}{3x}$

b.

The formula for the volume of a right circular cylinder is $V = \pi r^2 h$. The value of h can be expressed as

(1) $\frac{V}{\pi} r^2$

(2) $\frac{V}{\pi r^2}$

(3) $\frac{\pi r^2}{V}$

(4) $V - \pi r^2$

Keep Your Shades On

A.) On the set of axes below, solve the following system of inequalities graphically.

$y + 3 < 2x$

$-6x - 2y \leq -10$

B.) State the coordinates of *one* point that satisfies $y + 3 < 2x$, but does *not* satisfy $-6x - 2y \leq -10$.

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Mix it Up

Hope's teacher gave the class the quadratic function $f(x) = 3x^2 + 6x + 1$. Her teacher wanted the class to show two different methods to solve the equation $f(x) = 0$.

A.) Solve by completing the square.

B.) Solve by the quadratic formula.

Round your answer to the nearest tenth.

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What's the Meaning

A model rocket is launched into the air from ground level. The height, in feet, is modeled by $p(x) = -16x^2 + 32x$, where x is the number of elapsed seconds. What is the total number of seconds the model rocket will be in the air?

State the coordinates of the vertex and explain its meaning in the context of the problem.

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Graph it!

Graph the piecewise function:

$$f(x) = \begin{cases} x^2, x < 1 \\ \frac{1}{2}x + \frac{1}{2}, x > 1 \end{cases}$$

Evaluate:
f(–3) = _____

f(7) = _____

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Show it!

A farmhouse shelters 7 animals. Some are pigs and some are ducks. Altogether there are 18 legs. Write a system of equation to represent how many of each animal is at the shelter. How many of each animal are there?

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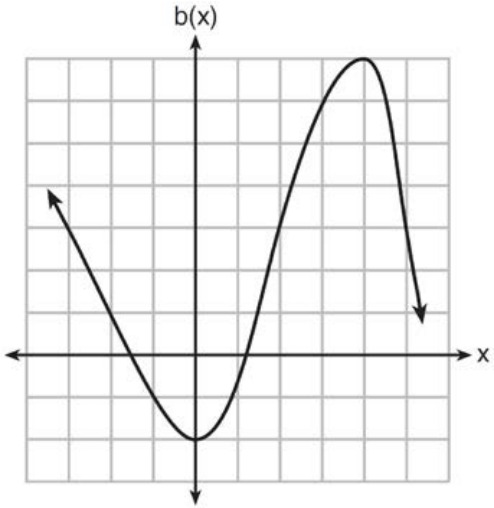
Describe it!

Javon is asked to transform the graph of b(x). The graph of $b(x)$ is transformed using the equation $h(x) = b(x - 2) - 3$. Describe how the graph of $b(x)$ changed to form the graph of $h(x)$.



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Show it!

Given a quadratic function with a vertex of (–3, –9) and a = 2.

a) Graph the function.

b) Write the function in vertex form.

c) Solve for the zeros using vertex form. Round to the nearest thousandth.

d) State the range of the function.

e) State the domain over which the function is decreasing.

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