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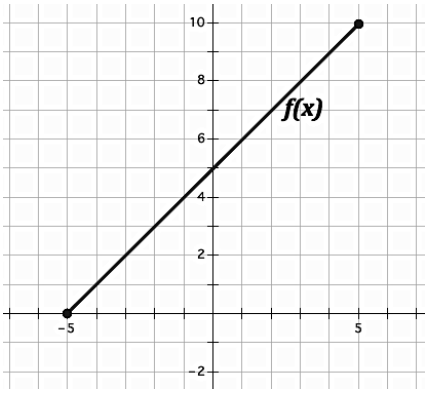
Ready, Set, Go!

Ready

Topic: Identifying features of functions

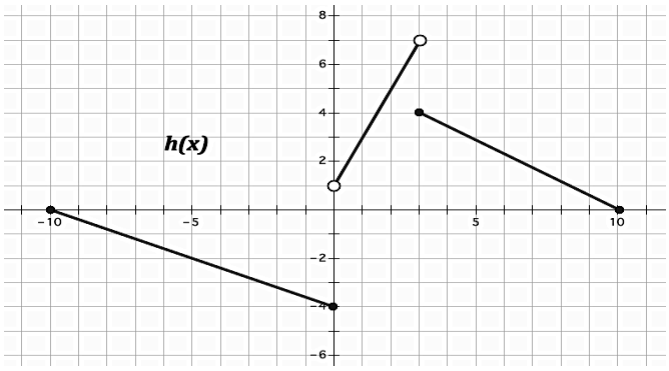
Given each representation of a function, determine the domain and range. Then indicate whether the function is discrete or continuous and increasing, decreasing, or constant.

1.



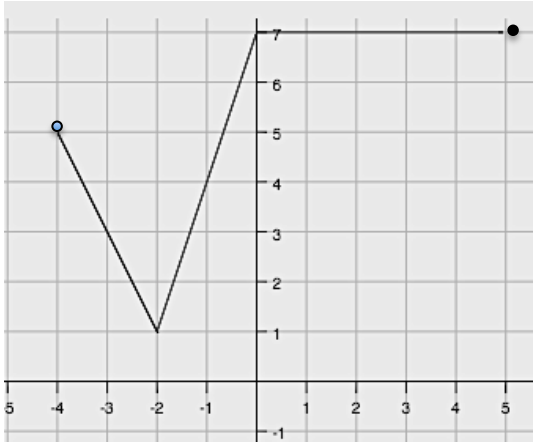
Description of Function:

2.



Description of Function:

3.



Description of Function:

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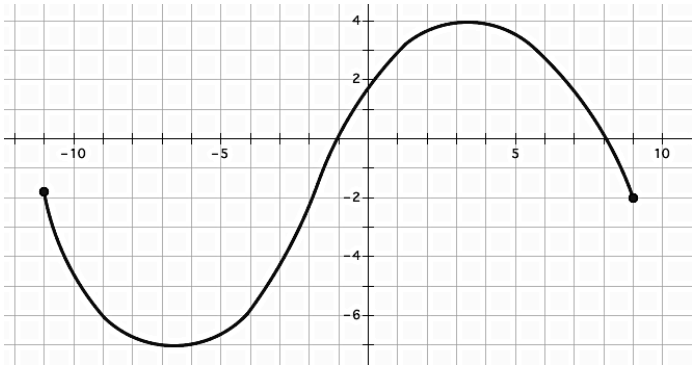
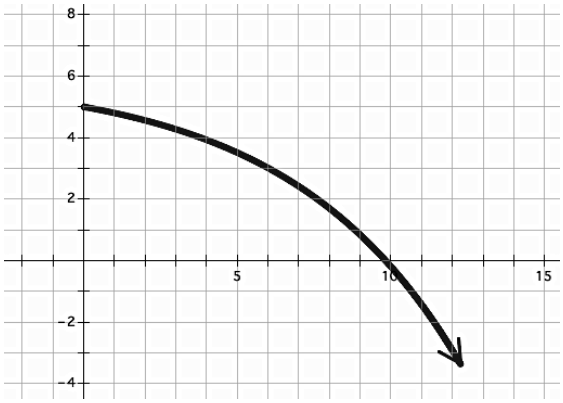
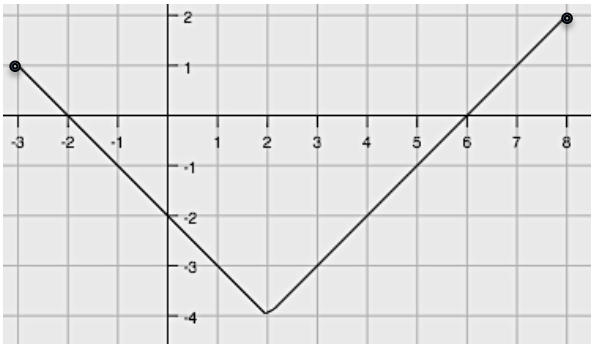
4. 

Description of Function:

5. 

Description of Function:

6. 

Description of Function:

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Set

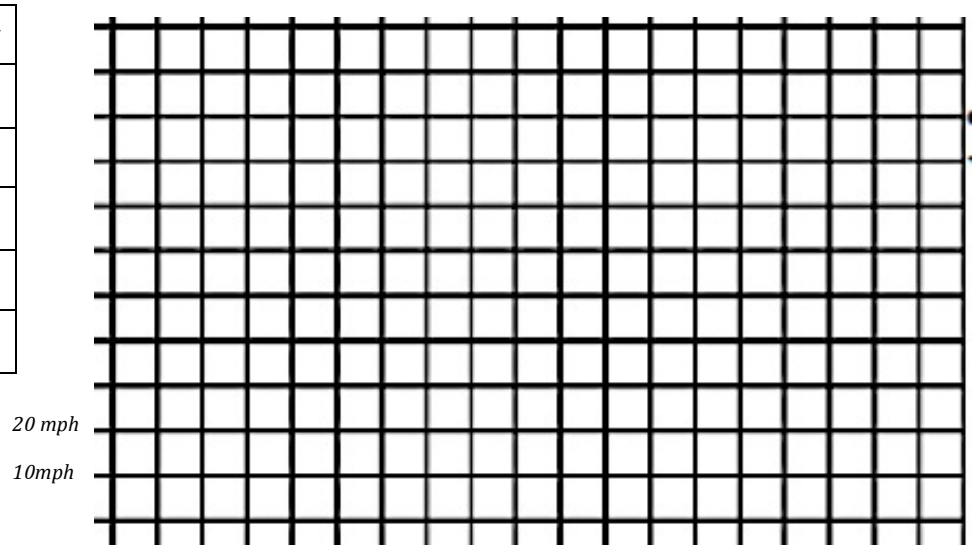
Topic: Square root functions

The speed limit for driving in a school zone is 20mph. That seems so slow if you're riding in a car. But have you ever wondered how quickly you could come to a complete stop going that speed (even if you had super quick reflexes)? It would take you over 13 feet! The **speed of a vehicle *s*** and the **stopping distance *d*** are related by the function $\boldsymbol{s(d) = \sqrt{30d}}$.

Fill in the table of values for $s(d)$. (Round to nearest whole number.)
Then graph $s(d)$ and answer the questions.

7.

$d\ ft$	$s(d)\ mph$
25	
50	
100	
200	
300	



stopping distance (scale 15 ft)

8. If you were a police officer investigating the site of an accident, you would be able to measure the length of the skid marks on the road and then approximate the speed of the driver. The driver swears he was sure he was going under 60 mph. The tire marks show a pattern for 150 feet. Is the driver's sense of his speed accurate? Justify your answer.

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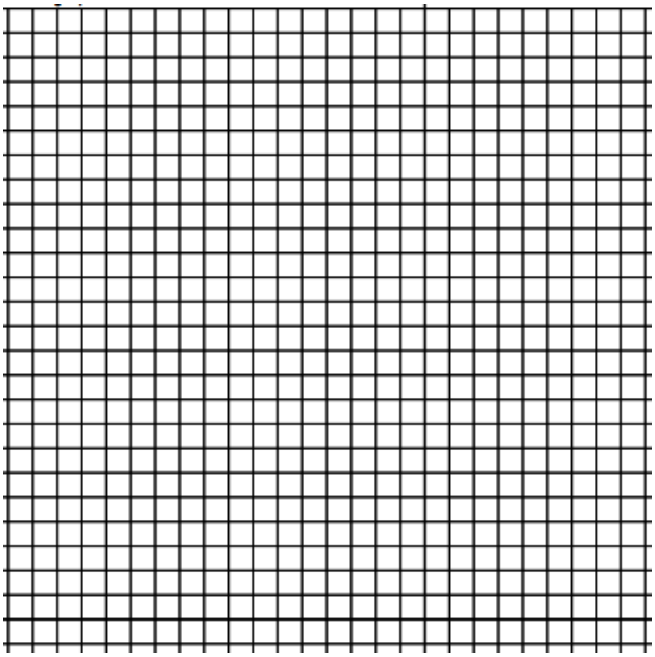
9. Use your answers in problem 8 to make a graph of stopping distance as a function of speed.



10. How are the two graphs related?

Go

Topic: Solving for a variable.

Solve the following for the indicated variable.

11. $C = 2\pi r;\ \ Solve\ for\ r.$

12. $A = \pi r^2;\ \ Solve\ for\ r.$

13. $V = \pi r^2 h;\ \ Solve\ for\ h.$

14. $V = \pi r^2 h;\ \ Solve\ for\ r.$

15. $V = e^3;\ \ Solve\ for\ e.$

16. $A = \frac{b_1+b_2}{2}h;\ \ solve\ for\ h$

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Ready, Set, Go!

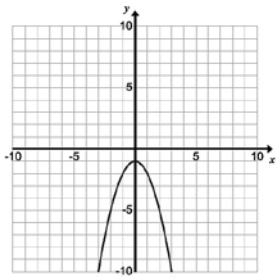
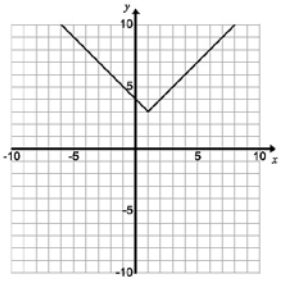
Ready Topic: Geometric symbols

Make a sketch that matches the geometric symbols. Label your sketch appropriately.

1. ΔRST
2. $\overrightarrow{AB}$
3. $\angle XYZ$
4. $\overleftrightarrow{GH}$
5. $\overline{JK} \perp \overline{PQ}$
6. Point S bisects $\overline{MN}$.
7. $\overrightarrow{AB}$ bisects $\angle XYZ$

Set Topic: Features of functions

Find the following key features for each function:

8. 	9. 	10. $f(x) = \begin{cases} -(x+3), & x < -3 \\ (x+3), & x \geq -3 \end{cases}$
a. Domain and range b. Intercepts c. Location and value of maxima/minima d. Intervals where function is increasing or decreasing	a. Domain and range b. Intercepts c. Location and value of maxima/minima d. Intervals where function is increasing or decreasing	a. Domain and range b. Intercepts c. Location and value of maxima/minima d. Intervals where function is increasing or decreasing

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Part II: Creating Functions
Directions: Write **two** different functions that meet the given requirements.

11. A function that is always decreasing
12. A function that is symmetrical about the line x=3
13. A function with a minimum of 5 at $x = 1$
14. A function that is increasing from (-∞, 2) then decreasing from [2, ∞)
15. A function with one real root
16. A function that has a domain from [-2, ∞)
17. A function with a range from [0, ∞)
18. A function with a common factor of 2
19. A function that is also a geometric sequence
20. A function with x-intercepts at (-1, 0) and (1,0)

Go

Topic: Find the inverse of each function. If the inverse is not a function, restrict the domain.

21. $f(x) = x^2; f^{-1}(x) =$

22. $g(x) = 2x + 4; g^{-1}(x) =$

23. $f(x) = (x + 1)^2; f^{-1}(x) =$

24. $h(x) = \frac{1}{3}x + 6; h^{-1}(x) =$

25. $\boldsymbol{f(x)} = \{(\mathbf{-3, 5})(\mathbf{-2, -9})(\mathbf{-1, -2})(\mathbf{0, -5})(\mathbf{1, -4})(\mathbf{2, 6})(\mathbf{3, 10})(\mathbf{4, 8})\};$

$\boldsymbol{f^{-1}(x)} = \{(\ ,\ )(\ ,\ )(\ ,\ )(\ ,\ )(\ ,\ )(\ ,\ )(\ ,\ )(\ ,\ )\}$

Write the piecewise-defined function for the following absolute value functions

26. $h(x) = |x + 3|$

27. $f(x) = |x^2 - 4| + 1$

28. $g(x) = 5|x + 3|$

29. $f(x) = |x^2 - 16|$

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