Ready, Set, Go!

Ready

Topic: Reading function values in a piece-wise defined graph.

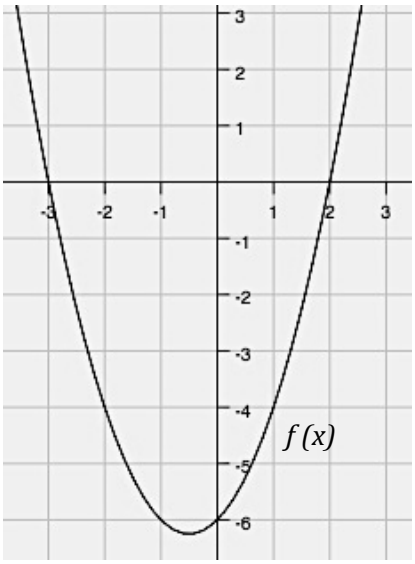
Use the graph to find the indicated function value.

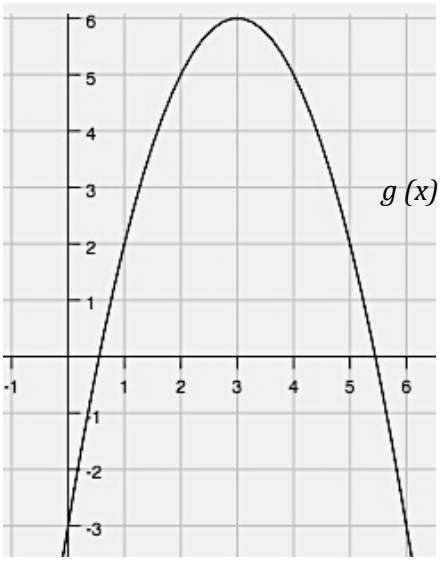
1. a.) $f(-3) =$

   b.) $f(-2) =$

   c.) $f(0) =$

   d.) $f(2) =$





2. a.) $g(0) =$

   b.) $g(2) =$

   c.) $g(0) =$

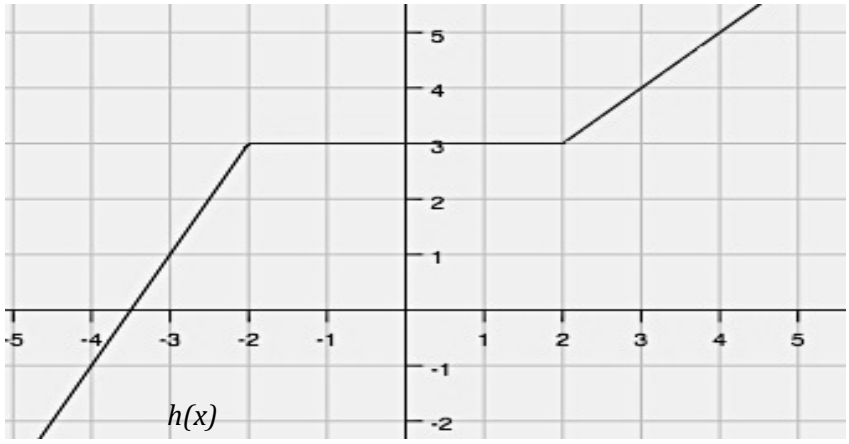
   d.) $g(5) =$

3. a.) $h(-4) =$

   b.) $h(0) =$

   c.) $h(2) =$

   d.) $h(4) =$

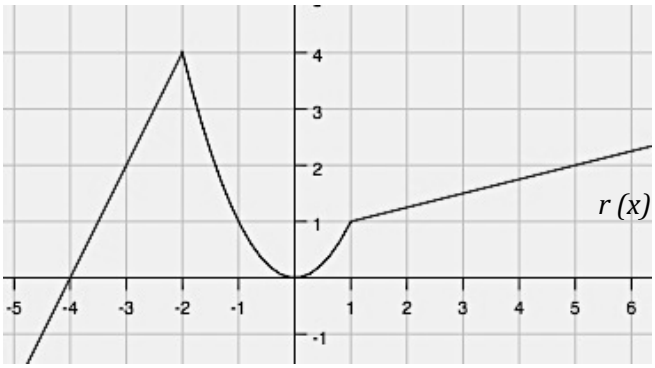


4. a.) $r(-3) =$

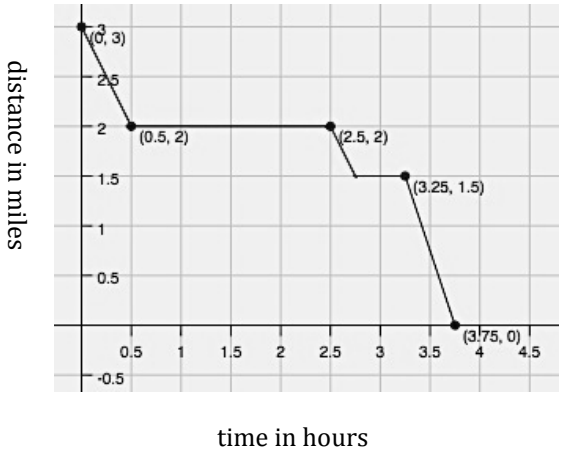
b.) $r(-1) =$

c.) $r(0) =$

d.) $r(5) =$



5. Isaac lives 3 miles away from his school. School ended at 3 pm and Isaac began his walk home with his friend Tate who lives 1 mile away from the school, in the direction of Isaac's house. Isaac stayed at Tate's house for a while and then started home. On the way he stopped at the library. Then he hurried home. The graph at the right is a **piece-wise defined function** that shows Isaac's distance from home during the time it took him to arrive home.



a.) How much time passed between school ending and Isaac's arrival home?

b.) How long did Isaac stay at Tate's house?

c.) How far is the library from Isaac's house?

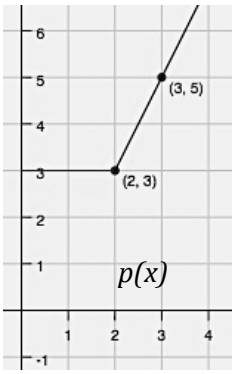
d.) Where was Isaac, 3 hours after school ended?

e.) Use function notation to write a mathematical sentence that says the same thing as question (d.)

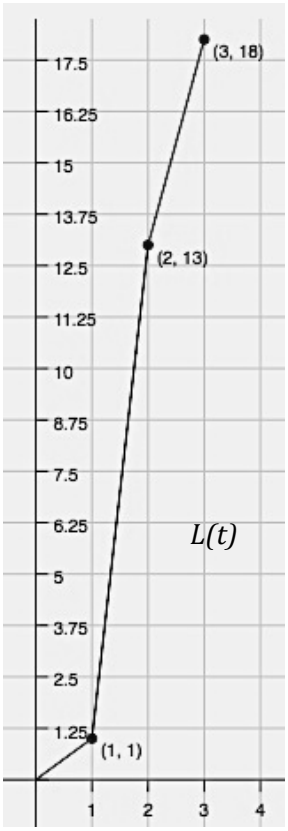
f.) When was Isaac walking the fastest? How fast was he walking?

Set

Topic: Writing piece-wise defined functions



6. A parking garage charges $3 for the first two hours that a car is parked in the garage. After that, the hourly fee is $2 per hour. Write a piece-wise function *p(x)* for the cost of parking a car in the garage for *x* hours. (The graph of *p(x)* is shown.)



7. Lexie completed an 18 mile triathlon. She swam 1 mile in 1 hour, bicycled 12 miles in 1 hour, and then ran 5 miles in 1 hour. The graph of Lexie's distance versus time is shown. Write a piecewise function *L(t)* for the graph.

Go

Topic: Using the point-slope formula to write the equations of lines.

Write the equation of the line (in point-slope form) that contains the given slope and point.

8. *p:* (1, 2); m = 3

9. *p:* (1, -2); m = -1

10. p: (5, -1); m = 2

Write the equation of the line (in point-slope form) that contains the given points.

11. *K* (0, 0); *L* (-4, 5)

12. *X* (-1, 7); *Y* (3, -1)

13. *T* (-1, -9); *V* (5, 18)

Ready, Set, Go!

Ready

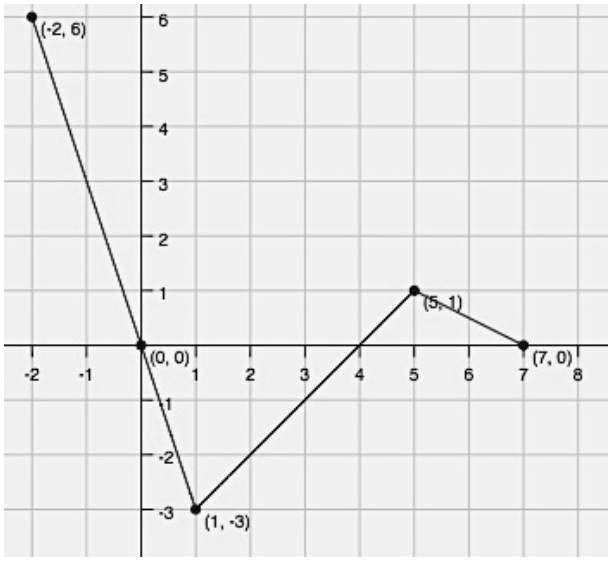
Topic: Solving absolute value equations.

Solve for x. (You will have two answers.)

1. $|x| = 7$
2. $|x - 6| = 3$
3. $|w + 4| = 11$
4. $-9|m| = -63$
5. $|3d| = 15$
6. $|3x - 5| = 11$
7. $-|m + 3| = -13$
8. $|-4m| = 64$
9. $2|x + 1| - 7 = -3$
10. $5|c + 3| - 1 = 9$
11. $-2|2p - 3| - 1 = -11$
12. Explain why the equation $|m| = -3$ has no solution.

Set Topic: Reading the domain and range from a graph

State the domain and range of the piece-wise functions in the graph. Use interval notation.

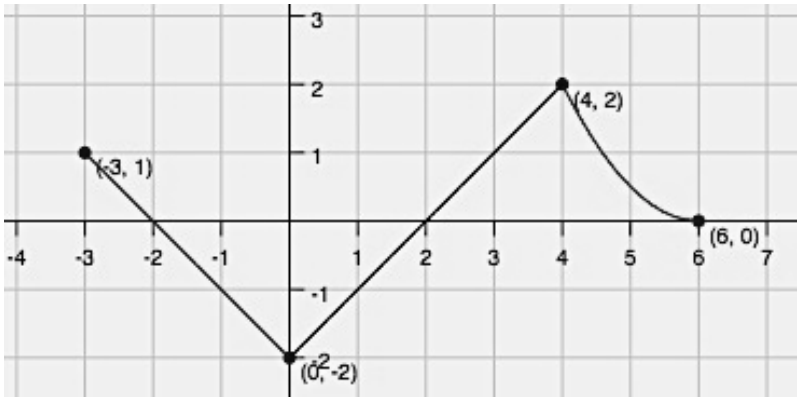


13. D: _____

R: _____

14. D: _____

R: _____

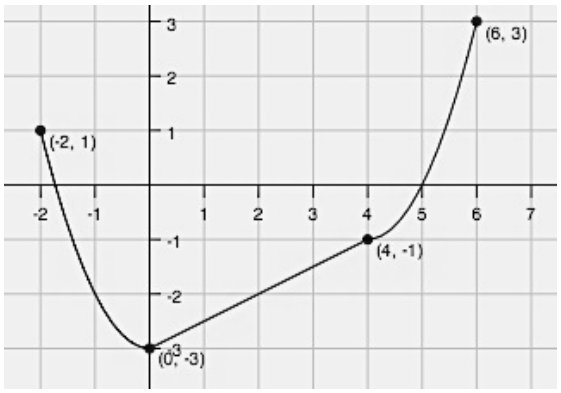


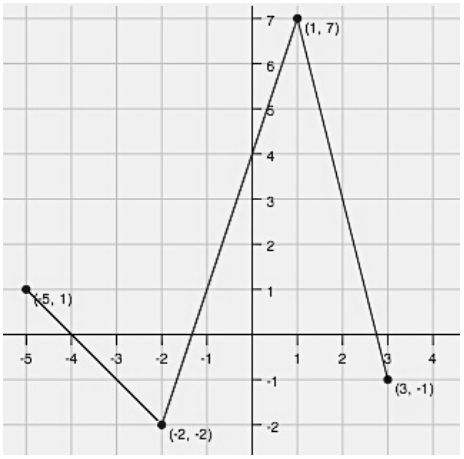
For each of the graphs below write the interval that defines each piece of the graph. Then write the domain of the entire piece-wise function.

Example: (Look at the graph in #14. Moving left to right. Piece-wise functions use set notation.)

interval 1 $-3 \leq x < 0$
interval 2 $0 \leq x < 4$
interval 3 $4 \leq x \leq 6$ **Domain**: $[-3,6]$ (We can use interval notation on the domain, if it's continuous.)

Pay attention to your inequality symbols!
You do not want the pieces of your graph to overlap. Do you know why?





15. interval 1 _____

interval 2 _____

interval 3 _____

Domain: _____

16. interval 1 _____

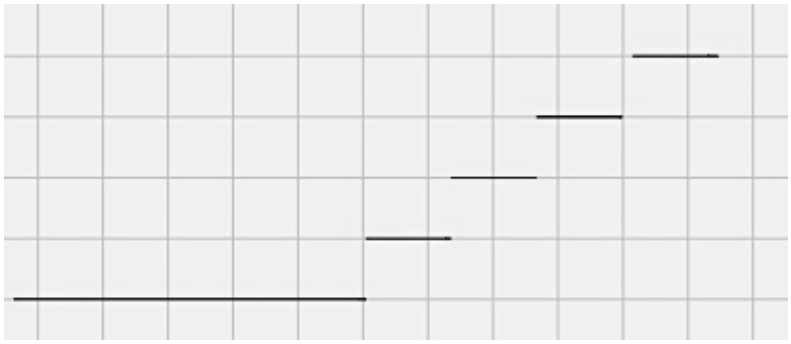
interval 2 _____

interval 3 _____

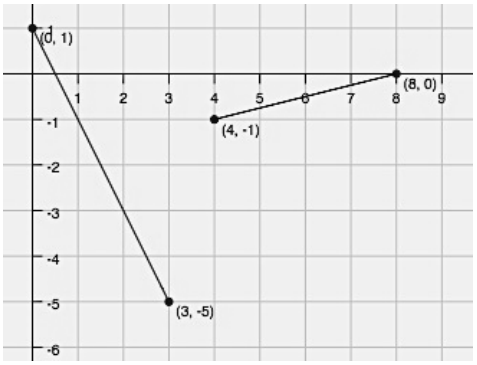
Domain: _____

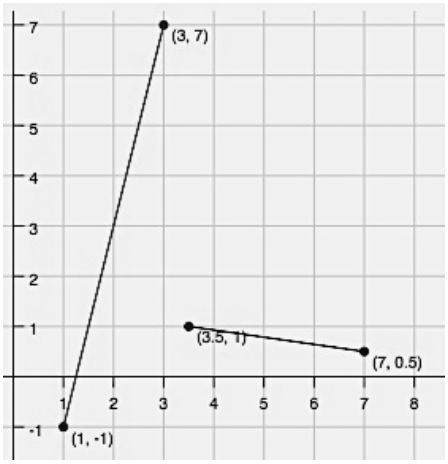
17. So far you've only seen continuous piece-wise defined functions, but piece-wise functions can also be non-continuous. In fact, you've had some real life experience with one kind of non-continuous piece-wise function. The graph below represents how some teachers calculate grades. Finish filling in the piece-wise equation. Then label the graph with the corresponding values.

$$f(x)=\begin{cases} A, & \_\_\_\_\_ \quad x \quad \_\_\_\_\_ \\ B, & \_\_\_\_\_ \quad x \quad \_\_\_\_\_ \\ C, & \_\_\_\_\_ \quad x \quad \_\_\_\_\_ \\ D, & \_\_\_\_\_ \quad x \quad \_\_\_\_\_ \\ F, & \_\_\_\_\_ \quad x \quad \_\_\_\_\_ \end{cases}$$



Write the piece-wise equations for the given graphs.

18. 

19. 

Go

Topic: Transformations on quadratic equations

Beginning with the parent function $f(x) = x^2$, write the equation of the new function $g(x)$ that is a transformation of $f(x)$ as described. Then graph it.

20. Shift $f(x)$ left 3 units, stretch vertically by 2, reflect $f(x)$ vertically, and shift down 5 units.

$g(x) =$ _____

21. Shift $f(x)$ right 1, stretch vertically by 3, and shift up 4 units.

$g(x) =$ _____

22. Shift $f(x)$ up 3 units, left 6, reflect vertically, and stretch by ½

$g(x) =$ _____