LESSON MAKER PRO

Function Value Quest

Find function values and make sense of them.

HIGH SCHOOL · A1.F.3.2

A1.F.3.2 "Use function notation; evaluate a function, including nonlinear, at a given point in its domain algebraically and graphically. Interpret the results in terms of the original context."

NAME _____ DATE _____

THE BIG IDEA

A function value tells you the output for a given input. To evaluate a formula, replace x with the input and simplify. On a graph, find the input on the horizontal axis, then read the matching output on the vertical axis.

WORKED EXAMPLE

If $f(x) = x^3 + 13$, find $f(-5)$.

1. Replace x with -5: $f(-5) = (-5)^3 + 13$.
2. Cube -5: $f(-5) = -125 + 13$.
3. Add: $f(-5) = -112$.

Answer: f(-5) = -112

PRACTICE 6 problems

1 If $a(x) = 5x - 8$, find $a(2)$.

ANSWER _____

2 If $b(x) = x^2 - 10$, find $b(-2)$.

ANSWER _____

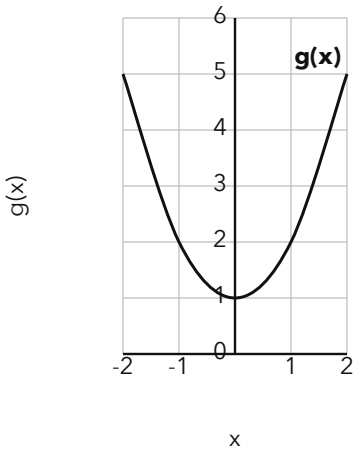
3 If $c(x) = 2x^2 + 1$, find $c(0)$.

ANSWER _____

4 If $d(x) = 12/(x + 1)$, find $d(1)$.

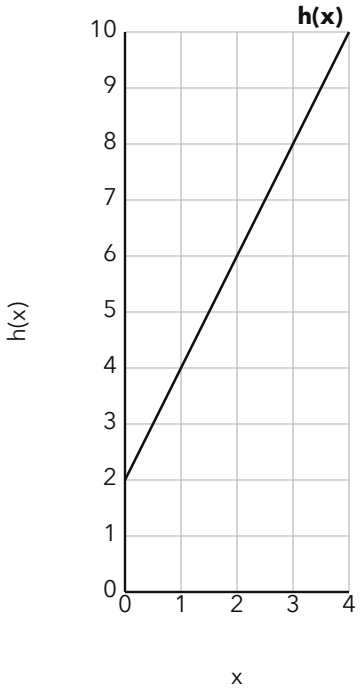
ANSWER _____

5 Use the graph to find g(-1).



ANSWER _____

6 Use the graph to find h(2).



ANSWER _____

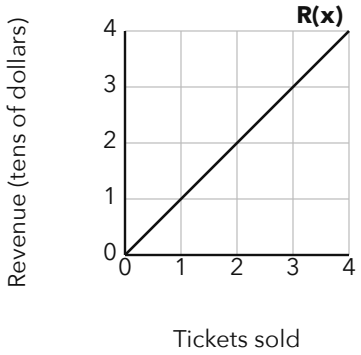
APPLY IT Show your work

1 A drone's height is $H(x) = 20x - 2x^2$ meters, where x is the number of seconds after takeoff, from 0 to 10 seconds. Find H(4) and explain what it means.

WORK SPACE

ANSWER _____

2 The graph shows R(x), the money a school club earns from concert tickets, measured in tens of dollars, for x tickets sold. Find R(2) and explain the result in dollars.



ANSWER _____

CHALLENGE One step up

A tossed ball's height is $B(x) = -x^2 + 6x + 1$ meters, where x is the number of seconds after the toss. Find B(2) and B(4). Explain why the heights are equal.

WORK SPACE AND ANSWER

ANSWER KEY # Function Value Quest

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	If a(x) = 5x - 8, find a(2).	**a(2) = 2**
2	If b(x) = x^2 - 10, find b(-2).	**b(-2) = -6**
3	If c(x) = $2x^2$ + 1, find c(0).	**c(0) = 1**
4	If d(x) = 12/(x + 1), find d(1).	**d(1) = 6**
5	Use the graph to find g(-1).	**g(-1) = 2**
6	Use the graph to find h(2).	**h(2) = 6**

PART 2 · APPLY IT

1. **H(4) = 48 meters. The drone is 48 meters high 4 seconds after takeoff.** Substitute 4: H(4) = 20(4) - $2(4)^2$ = 80 - 32 = 48.
2. **R(2) = 2 tens of dollars. The club earns $20 from selling 2 tickets.** At x = 2, the graph has an output of 2. Two tens of dollars is $20.

CHALLENGE

B(2) = B(4) = 9 meters. The times are equally far from x = 3, when the ball reaches its highest point.

Accept equivalent statements with the correct units and context. For the challenge, accept an explanation that the ball rises and then falls to the same height, or that the two times are equally far from the time of maximum height.