

Understanding Functions and Function Notation

Grade 9 – Algebra 1 math · Test · Standards: F-IF.A.1, F-IF.A.2, F-IF.B.5

Name: _____ Date: _____ Class: _____

This test has 8 questions worth 20 points in total. Use function notation correctly, show every substitution and write interpretations as full sentences with units. A calculator is allowed. Plan on about 45 minutes.

Standards: F-IF.A.1, F-IF.A.2, F-IF.B.5 · **Level:** Grade 9 Algebra 1

Time: 45 minutes · 8 questions · Total: 20 points · Calculator: as allowed by your teacher

Question 1 Is it a function? (2 points)

Decide whether each relation is a function and explain. (a)

x	1	2	3	4	5
y	6	9	6	12	9

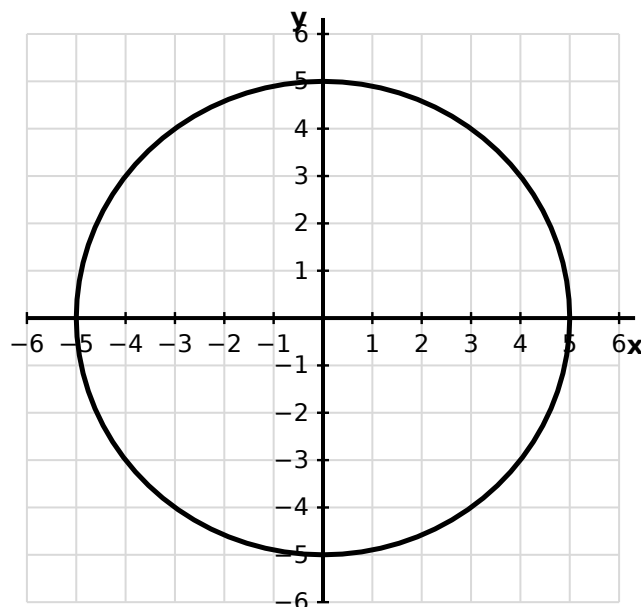
(1 point) (b) $\{(0, 1), (0, 4), (2, 3)\}$ (1 point)

Question 2 Evaluate a quadratic (2 points)

If $f(x) = x^2 - 4x + 7$, find $f(-3)$ and $f(2)$.

Question 3 Vertical line test (2 points)

Does the graph represent y as a function of x ? Justify your answer.

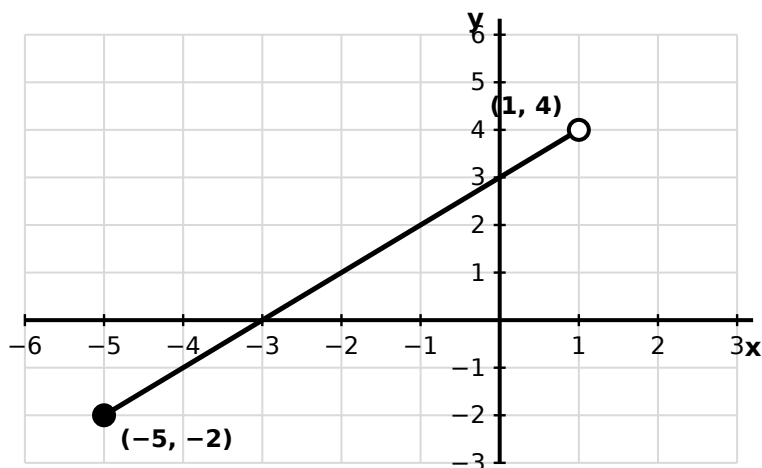


Question 4 Interpret function values (3 points)

The speed of a train in miles per hour, t minutes after leaving the station, is $S(t)$. Interpret each statement. (a) $S(6) = 48$ (1 point) (b) $S(40) = 0$ (1 point) (c) State the units of the input and of the output. (1 point)

Question 5 Domain and range of a graph (3 points)

Study the graph of f below.



A function graphed on a limited domain.

(a) Write every allowed input as an inequality. (1 point) (b) Write every output that occurs as an inequality. (1 point) (c) What output does the graph give at an input of -2.5 ? (1 point)

Question 6 Discrete or continuous (2 points)

A theater sells tickets for \$11 each, and it has 120 seats, so $T(n) = 11n$. (a) Is the domain discrete or continuous? Explain. (1 point) (b) Describe the range. (1 point)

Question 7 Using function notation (3 points)

If $f(x) = 6 - 4x$, (a) find $f(-2)$. (1 point) (b) find x when $f(x) = -18$. (1 point) (c) simplify $f(x + 1)$. (1 point)

Question 8 Rental charges (3 points)

A rental shop charges $R(h) = 25 + 12h$ dollars for h hours, with $0 \leq h \leq 8$. (a) Find $R(3.5)$. (1 point) (b) State the domain and range. (1 point) (c) Find h when $R(h) = 85$. (1 point)