

Unit 5: Functions

ADVANCED

Name: _____ Date: _____

Show all work. Give each answer as an exact value (number, fraction like $\frac{3}{4}$, or coordinate pair like $(3, -4)$). Use function notation carefully.

1. Given $f(x) = 3x^2 - 5x + 7$, evaluate $f(-4)$.

Answer: _____

2. Given $g(x) = (2x - 9)/(x + 6)$, evaluate $g(-3)$.

Answer: _____

3. For $h(x) = 4x - 11$, find the value of c such that $h(c) = 33$.

Answer: _____

4. The domain of a function is restricted by its formula $f(x) = \sqrt{2x - 14}$. What is the smallest value of x in the domain?

Answer: _____

5. For the function $f(x) = 8/(x^2 - 25)$, which single positive value of x must be EXCLUDED from the domain?

Answer: _____

6. A function is defined only on the set of points $\{(-3, 8), (0, 8), (4, -2), (9, 5)\}$. What is the largest value in its range?

Answer: _____

7. Given $f(x) = -2x^2 + 12x + 1$, the maximum occurs at the vertex. Find the x -coordinate of the vertex.

Answer: _____

8. Using $f(x) = -2x^2 + 12x + 1$, find the maximum value of the function (the y -coordinate of the vertex).

Answer: _____

9. For $f(x) = x^2 - 9x + 20$, find the larger x -intercept (the larger value of x where $f(x) = 0$). Give the x -coordinate only.

Answer: _____

10. Given $f(x) = 5x - 8$ and $g(x) = 2x + 3$, find the value of x where $f(x) = g(x)$.

Answer: _____

11. Compute the average rate of change of $f(x) = x^2 + 3x$ over the interval from $x = -1$ to $x = 6$. Give your answer as a single number.

Answer: _____