U1 L4 Functions — Practice

Name: _____ HR: _____

Group A — Testing for Functions

Determine whether each relation represents y as a function of x. If an equation, solve for y first if needed.

1. Does this table represent y as a function of x?

Input, x: 10 7 4 7 10

Output, y: 3 6 9 12 15

2. $-5x + y^2 = 4$

3. $y = \sqrt{16 - x^2}$

4. $y = -75$

Group B — Function Notation & Evaluating

Find each function value. Show your substitution.

5. f(x) = 2x² − 3x + 1. Find f(0), f(−2), and f(3).

6. $g(x) = \sqrt{x + 4}$ Find g(0), g(5), and g(−4).

7. h(x) = |x − 3|. Find h(−2), h(3), and h(10).

8. $f(x) = \dfrac{x + 1}{x - 2}$. Find f(0) and f(4). Then explain why f(2) is undefined.

Group C — Finding the Domain

Find the domain of each function.

9. $f(x) = \sqrt{x - 3}$	**10.** $f(x) = \dfrac{1}{x + 5}$
11. $f(x) = \sqrt{9 - x^2}$	**12.** $f(x) = \dfrac{x}{x^2 - 16}$

Group D — The Difference Quotient

Find and simplify [f(x + h) − f(x)] / h for each function.

$\frac{f(x+h)-f(x)}{h},\ h \neq 0$

13. f(x) = x² + 3x	**14.** f(x) = 2x² + 3x − 1

Group E — Mixed Applications

Show your work.

15. The height (in feet) of a ball t seconds after being thrown is modeled by h(t) = −16t² + 40t + 5. Find the height of the ball after 1 second. Determine the time it takes the ball to reach the ground. (Solve h(t)=0.)	**16.** The area of a circle with radius r is given by A(r) = πr². Mathematically, the domain of A is all real numbers. Explain why a smaller domain makes sense for this real-life context, and state that domain.