

4.5 Implicitly Defined Functions

AP Precalculus

Name: _____

CA #2

- Which of the following sets of ordered pairs satisfy the implicitly defined function $x^2 - xy + y^2 - 3 = 0$.
 - $(0, \sqrt{3}), (\sqrt{3}, 0), (1, 0), (1, -3)$
 - $(0, -\sqrt{3}), (\sqrt{3}, 0), (1, 0), (1, 3)$
 - $(0, \pm\sqrt{3}), (\pm\sqrt{3}, 0), (1, -2), (1, -1)$
 - $(0, \pm\sqrt{3}), (\pm\sqrt{3}, 0), (1, 2), (1, -1)$
 - None of these satisfy the given function.

- The equation $x^2 + y^2 - 1 = 0$ represents a circle.
 - Solve for one of the variables that would give an explicit equation for the **bottom** half of the circle.
 - Solve for one of the variables that would give an explicit equation for the **right** half of the circle.

- Find the rate of change of y with respect to x and determine how the two quantities in the implicitly defined function $5x^2 + y^2 - 20 = 0$ vary together on the interval $-2 \leq x \leq 0$, and $y \leq 0$.

- The ordered pair $(1, 8)$ on the graph of an implicitly defined function, and when paired with another close point on the graph, the change in y is 2. Which of the following ordered pairs would indicate a vertical interval when paired with the given ordered pair?
 - $(-1, 2)$
 - $(1, -2)$
 - $(-1, -10)$
 - $(1, 10)$

1. D	2a. $y = -\sqrt{1-x^2}$	2b. $x = \sqrt{1-y^2}$	3. $\frac{dy}{dx} = -\sqrt{5}$, as one variable increases, the other decreases.	4. D
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1. D	2a. $y = -\sqrt{1-x^2}$	2b. $x = \sqrt{1-y^2}$	3. $\frac{\Delta y}{\Delta x} = -\sqrt{5}$, as one variable increases, the other decreases.	4. D
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