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# Graded quiz on Cartesian Plane and Types of Function

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1. Which of the following points in the Cartesian Plane have positive $x$-coordinate and negative $y$-coordinate? 1 / 1 puntos

- $(-4, 5)$
- $(0, 0)$
- $(5, 7)$
- $(7, -1)$ ✓

Correcto
The $x$-coordinate, 7, is positive, and the $y$-coordinate, $-1$, is negative.

2. Which of the following points is in the first quadrant of the Cartesian Plane? 1 / 1 puntos

- $(5, -1)$
- $(-5, 1)$
- $(7, 11)$ ✓
- $(-4, -7)$

Correcto
The first quadrant is defined to be all points in the Cartesian plane whose coordinates are both positive.

3. Let $A, B, C, D$ be points in the Cartesian Plane, and let the set $S = \{B, C, D\}$ 1 / 1 puntos

Suppose that the distances from $A$ to $B, C, D$ are $5.3, 2.1$, and $11.75$, respectively.

Which of the following points is the nearest neighbor to the point $A$ in the set $S$?

- C ✓
- B
- D
- A

Correcto
The distance from $A$ to $C$ is $2.1$ and that is smaller than the distance from $A$ to any other element of $S$.

4. Find the distance between the points $A = (2, 2)$ and $B = (-1, -2)$. 1 / 1 puntos

- $1$
- $25$
- $5$ ✓
- $-25$

Correcto
Recall that the distance between points $(a, b)$ and$(c, d)$ is $\sqrt{(c-a)^2 + (d-b)^2}$

In this case we have:

$$\sqrt{(-1-2)^2 + (-2-2)^2} = \sqrt{(-3)^2 + (-4)^2} = \sqrt{25} = 5$$

5. Find the slope of the line segment between the points $A = (0, 1)$ and $B = (1, 0)$. **1 / 1 puntos**

- (●) $-1$
- ( ) $1$
- ( ) $\sqrt{2}$
- ( ) $0$

✓ **Correcto**

The slope of this line segment is $\dfrac{0-1}{1-0} = -1$

6. Find the point-slope form of the equation of the line with slope $-2$ that goes through the point $(5, 4)$. **0 / 1 puntos**

- ( ) $y - 4 = 2(x - 5)$
- ( ) $(5, 4)$
- (●) $y - 5 = -2(x - 4)$
- ( ) $y - 4 = -2(x - 5)$

! **Incorrecto**

Remember that the point-slope form for the equation of a line with slope $m$ that goes through the point $(x_0, y_0)$ is $y - y_0 = m(x - x_0)$.

In this case, the slope $m = -2$ is given and used correctly in this answer.

However, this answer uses the point $(4, 5)$ which is not on the line.

7. Which of the following equations is for a line with the same slope as $y = -3x + 2$? **1 / 1 puntos**

- ○ $y = 5x + 2$
- ◉ $y = -3x - 8$
- ○ $y = 8x - 3$
- ○ $y = 5x$

✓ **Correcto**

The slope-intercept formula for a line is $y = mx + b$, where $m$ is the slope and $b$ is the $y$-coordinate of the point where the line hits the $y$-axis.

This line has slope $m = -3$ which is the same slope as the given line.

8. Which of the following equations is for a line with the same $y$-intercept as $y = -3x + 2$? **1 / 1 puntos**

- ○ $y = 8x - 3$
- ◉ $y = 5x + 2$
- ○ $y = 5x$
- ○ $y = -3x - 8$

✓ **Correcto**

The the slope-intercept formula for a line is $y = mx + b$, where $m$ is the slope and $b$ is the $y$-coordinate of the point where the line hits the $y$-axis. This line has a $y$-intercept of $2$ which is the same as the given line.

9. How many lines contain both the point $A = (1, 1)$ and the point $B = (2, 2)$? **1 / 1 puntos**

- ◉ $1$
- ○ None
- ○ infinitely many
- ○ $2$

✓ **Correcto**

The line with equation $y = x$ is the one and only line that meets the stated requirements.

9. How many lines contain both the point $A = (1, 1)$ and the point $B = (2, 2)$? 1 / 1 puntos

- (•) $1$
- ( ) None
- ( ) infinitely many
- ( ) $2$

✓ **Correcto**
The line with equation $y = x$ is the one and only line that meets the stated requirements.

10. Suppose that we have two sets, $A = \{a, b\}$ and $Z = \{x, y\}$. How many different functions $F : A \to Z$ are possible? 1 / 1 puntos

- ( ) There are infinitely many
- ( ) $1$
- ( ) There are none
- (•) $4$

✓ **Correcto**
A function $F : A \to Z$ is a rule which assigns an element $F(a) \in Z$ to each element $a \in A$.

There are two elements in $A$; namely, $a$ and $b$. For each of these elements, there are two assignment choices we could make: $x$ and $y$.

Here are the four possible functions:

$F(a) = x, F(b) = y$, OR

$F(a) = y, F(b) = x$, OR

$F(a) = x, F(b) = x$, OR

$F(a) = y, F(b) = y$.

11. How many graphs contain both the point $A = (0, 0)$ and the point $B = (1, 1)$ **1 / 1 puntos**

- ○ None
- ○ $2$
- ◉ Infinitely many
- ○ $1$

✓ **Correcto**
The graphs of $f(x) = x, g(x) = x^2, h(x) = x^3, s(x) = x^4, \ldots$ all contain both $A$ and $B$

12. Suppose that $g : \mathbb{R} \to \mathbb{R}$ is a continuous function whose graph intersects the $x$-axis more than once. Which of the following statements is true? **1 / 1 puntos**

- ○ $g$ is strictly increasing.
- ○ $g$ is strictly decreasing.
- ◉ $g$ is neither strictly increasing nor strictly decreasing.
- ○ All of the above.

✓ **Correcto**
The function $g$ fails the horizontal line test, so it can neither be strictly increasing nor strictly decreasing.

13. Find the slope of the line segment between the points $A = (1, 1)$ and $B = (5, 3)$. **1 / 1 puntos**

- ○ $\sqrt{20}$
- ○ $4$
- ◉ $\frac{1}{2}$
- ○ $2$

✓ **Correcto**
The slope of this line segment is $\frac{3-1}{5-1} = \frac{1}{2}$, where $3 - 1$ is the rise and $5 - 1$ is the run.