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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 point**

   ○ $(5, 7)$

   ○ $(0, 0)$

   ◉ $(7, -1)$

   ○ $(-4, 5)$

   ✓ **Correct**
   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 point**

   ○ $(-5, 1)$

   ○ $(-4, -7)$

   ○ $(5, -1)$

   ◉ $(7, 11)$

   ✓ **Correct**
   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 point**

   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?

   ○ D

   ○ B

   ◉ C

   ○ A

   ✓ **Correct**
   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 point**

   ○ 1

   ◉ 5

   ○ 25

   ○ -25

   ✓ **Correct**
   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 point

◉ -1

○ 1

○ $\sqrt{2}$

○ 0

✓ **Correct**

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

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

1 / 1 point

◉ $y - 4 = -2(x - 5)$

○ $y - 4 = 2(x - 5)$

○ $y - 5 = -2(x - 4)$

○ $(5, 4)$

✓ **Correct**

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 the point $(5, 4)$ on the line is given.

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

1 / 1 point

○ $y = 5x$

◉ $y = -3x - 8$

○ $y = 5x + 2$

○ $y = 8x - 3$

✓ **Correct**

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.

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

1 / 1 point

◉ $y = 5x + 2$

○ $y = 5x$

○ $y = 8x - 3$

○ $y = -3x - 8$

✓ **Correct**

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.

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

0 / 1 point

○ None

○ infinitely many

◉ 2

○ 1

10. Suppose that we have two sets, $A = \{a, b\}$ and $Z = \{x, y\}$. How many different functions $F : A \to Z$ are possible?   `0 / 1 point`

○ There are none

◉ There are infinitely many

○ 1

○ 4

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

○ Infinitely many

◉ 2

○ None

○ 1

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 point`

○ g is strictly increasing.

○ All of the above.

◉ g is neither strictly increasing nor strictly decreasing.

○ g is strictly decreasing.

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

○ 4

○ 2

◉ $\dfrac{1}{2}$

○ $\sqrt{20}$