This is the Answer Key for Module 2 Version C.

6. First, find the equation of the line containing the two points below. Then, write the equation as $y = mx + b$ and choose the intervals that contain m and b.

$$(7, -5) \text{ and } (2, 2)$$

The solution is $y = -1.4x + 4.8$

  A. $m \in [-6, -1]$ and $b \in [4.63, 5.66]$

    * Correct option.

  B. $m \in [-6, 2]$ and $b \in [-5.25, -4.47]$

    Corresponds to using the correct slope and getting the negative y-intercept.

  C. $m \in [-3, 0]$ and $b \in [-12.9, -11.65]$

    Corresponds to using the correct slope/equation but not distributing correctly using the first point.

  D. $m \in [-6, 2]$ and $b \in [-0.09, 0.91]$

    Corresponds to using the correct slope/equation but not distributing correctly using the second point.

  E. $m \in [-1, 7]$ and $b \in [-1.48, -0.26]$

    Corresponds to using the negative slope and the correct equation.

General Comments: Remember to keep your points in order when plugging in to the slope formula.

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7. Write the equation of the line in the graph below in the form $Ax + By = C$. Then, choose the intervals that contain $A, B,$ and C.

$$\text{Equation that was graphed: } -0.75x - 3$$

The solution is $3x + 4y = -12$

  A. $A \in [3.23, 4.62], \quad B \in [-3.1, -2.4], \text{ and } \quad C \in [8, 10]$

    Corresponds to using the opposite slope of the graph, but did everything else correctly.

  B. $A \in [-3.51, -2.89], \quad B \in [-4.5, -3.1], \text{ and } \quad C \in [10, 14]$

    Corresponds to not making A positive (by multiplying the equation by -1).

  C. $A \in [2.6, 3.72], \quad B \in [2.6, 4.9], \text{ and } \quad C \in [-20, -7]$

    * Correct option.

  D. $A \in [0.26, 1.17], \quad B \in [-0.4, 2.7], \text{ and } \quad C \in [-8, -2]$

    Corresponds to not removing rational values.

  E. $A \in [1.28, 1.95], \quad B \in [-1.9, -0.3], \text{ and } \quad C \in [8, 10]$

    Corresponds to using the opposite slope of the graph and not removing rational values.

General Comments: Standard form is supposed to have $A > 0$ and all fractions removed.

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8. Find the equation of the line described below. Write the linear equation as $y = mx + b$ and choose the intervals that contain m and b.

$$\text{Parallel to } 7x + 4y = 11 \text{ and passing through the point } (-2, 10).$$

The solution is $y = -1.75x + 6.5$

A. $m \in [-5, 0]$ and $b \in [-9, -5]$

   Corresponds to using the correct slope and getting the negative y-intercept.

B. $m \in [1.2, 2]$ and $b \in [12, 16]$

   Corresponds to using the negative slope.

C. $m \in [-3, -1]$ and $b \in [-1, 1]$

   Corresponds to using the correct slope and mis-distributing while simplifying to slope-intercept form.

D. $m \in [-1.2, -0.4]$ and $b \in [5, 9]$

   Corresponds to using the reciprocal slope $(1/m)$.

E. $m \in [-2.9, -1.1]$ and $b \in [3, 8]$

   * Correct option.

General Comments: Parallel slope is the same and perpendicular slope is opposite reciprocal. Opposite reciprocal means flipping the fraction and changing the sign (positive to negative or negative to positive).

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9. Solve the equation below. Then, choose the interval that contains the solution.

$$-11(9 + 12x) = -7(6x - 4)$$

The solution is -1.411

A. $x \in [0.72, 0.84]$

   Corresponds to not distributing the negative in front of the first parentheses correctly.

B. $x \in [-0.49, -0.23]$

   Corresponds to getting the negative of the actual solution.

C. $x \in [-1.53, -1.31]$

   * Correct option.

D. $x \in [-0.97, -0.6]$

   Corresponds to not distributing the negative in front of the second parentheses correctly.

E. There are no Real solutions.

   Corresponds to students thinking a fraction means there is no solution to the equation.

General Comments: The most common mistake on this question is to not distribute correctly.

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10. Solve the linear equation below. Then, choose the interval that contains the solution.

$$\frac{5x + 5}{4} - \frac{4x - 4}{6} = \frac{5x - 8}{2}$$

The solution is 3.087

A. $x \in [8.64, 8.9]$

   Corresponds to dividing only the first term for each fraction (rather than multiplying to remove the fractions).

B. $x \in [2.38, 2.59]$

   Corresponds to not distributing the negative correctly for the second fraction.

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C. $x \in [2.71, 3.23]$

   * Correct option.

D. $x \in [1.28, 1.65]$

   Corresponds to dividing only the second term for each fraction (rather than multiplying to remove the fractions).

E. There are no Real solutions.

   Corresponds to students thinking a fraction means there is no solution to the equation.

General Comments: If you are having trouble with this problem, try to remove a fraction at a time by multiplying each term by the denominator.

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