1. Which of the following intervals describes the Domain of the function below?

$$f(x) = \log_2(x-4) + 8$$

A. $(-\infty, a), a \in [-4, 0]$

B. $[a, \infty), a \in [5, 12]$

C. $(-\infty, a], a \in [-10, -7]$

D. $(a, \infty), a \in [3, 6]$

E. $(-\infty, \infty)$

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2. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$\log_5(4x+5) + 6 = 2$$

A. $x \in [-1.25, 4.75]$

B. $x \in [-262.25, -255.25]$

C. $x \in [-255.75, -249.75]$

D. $x \in [1, 6]$

E. There is no Real solution to the equation.

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3. Which of the following intervals describes the Domain of the function below?

$$f(x) = -e^{x+3} + 8$$

A. $(-\infty, a), a \in [2, 10]$

B. $[a, \infty), a \in [-10, -6]$

C. $(-\infty, a], a \in [2, 10]$

D. $(a, \infty), a \in [-10, -6]$

E. $(-\infty, \infty)$

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4. Which of the following intervals describes the Range of the function below?

$$f(x) = -\log_2(x-4) - 4$$

A. $[a, \infty), a \in [-6, -2]$

B. $(-\infty, a), a \in [0, 9]$

C. $[a, \infty), a \in [0, 9]$

D. $(-\infty, a), a \in [-6, -2]$

E. $(-\infty, \infty)$

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5. Solve the equation for x and choose the interval that contains x (if it exists).

$$11 = \ln \sqrt[5]{\frac{24}{e^{6x}}}$$

A. $x \in [-3.89, -2.83]$

B. $x \in [8.25, 8.96]$

C. $x \in [-3.11, -2.24]$

D. There is no Real solution to the equation.

E. None of the above.

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6. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$\log_4(-4x + 8) + 6 = 3$$

A. $x \in [-2.5, 2.5]$

B. $x \in [-22.9, -18.7]$

C. $x \in [-16.5, -11.1]$

D. $x \in [-20.5, -14.9]$

E. There is no Real solution to the equation.

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7. Solve the equation for x and choose the interval that contains x (if it exists).

$$14 = \sqrt[7]{\frac{25}{e^{3x}}}$$

A. $x \in [-34.74, -31.74]$

B. $x \in [-6.08, -2.08]$

C. $x \in [-3.69, 4.31]$

D. There is no Real solution to the equation.

E. None of the above.

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8. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$3^{5x+4} = \left(\frac{1}{25}\right)^{-2x-4}$$

A. $x \in [-10, -5.4]$

B. $x \in [8.3, 9.3]$

C. $x \in [0.3, 2.1]$

D. $x \in [-3.4, -1]$

E. There is no Real solution to the equation.

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9. Which of the following intervals describes the Range of the function below?

$$f(x) = e^{x-7} - 1$$

A. $(a, \infty), a \in [-1.47, -0.87]$

B. $(-\infty, a], a \in [0.55, 1.58]$

C. $(-\infty, a), a \in [0.55, 1.58]$

D. $[a, \infty), a \in [-1.47, -0.87]$

E. $(-\infty, \infty)$

10. Solve the equation for x and choose the interval that contains the solution (if it exists).

$$5^{3x+3} = 36^{4x-4}$$

A. $x \in [17.16, 21.16]$

B. $x \in [6, 8]$

C. $x \in [-0.26, 1.74]$

D. $x \in [1.02, 3.02]$

E. There is no Real solution to the equation.