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

$$f(x) = -\log_2(x-1) - 8$$

A. $(-\infty, a], a \in [5, 10]$

B. $(a, \infty), a \in [0, 5]$

C. $[a, \infty), a \in [-10, -4]$

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

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

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

$$5^{2x+2} = \left(\frac{1}{343}\right)^{3x-5}$$

A. $x \in [-1.34, 0.66]$

B. $x \in [1.25, 6.25]$

C. $x \in [-25.97, -23.97]$

D. $x \in [7, 8]$

E. There is no Real solution to the equation.

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

$$10 = \ln \sqrt[3]{\frac{15}{e^{6x}}}$$

A. $x \in [-3.07, -2.67]$

B. $x \in [-2.08, -1.54]$

C. $x \in [-5.2, -3.98]$

D. There is no Real solution to the equation.

E. None of the above.

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

$$5^{2x+2} = 216^{3x-5}$$

A. $x \in [6, 13]$

B. $x \in [-0.46, 1.54]$

C. $x \in [28.1, 31.1]$

D. $x \in [1.33, 3.33]$

E. There is no Real solution to the equation.

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

$$f(x) = -\log_2(x - 5) + 2$$

A. $[a, \infty), a \in [3.1, 7.7]$

B. $[a, \infty), a \in [-6.8, -3.7]$

C. $(-\infty, a), a \in [0.2, 2.6]$

D. $(-\infty, a), a \in [-2.1, 0]$

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

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

$$f(x) = -e^{x+3} - 2$$

A. $(-\infty, a], a \in [-6, 0]$

B. $(a, \infty), a \in [2, 4]$

C. $(-\infty, a), a \in [-6, 0]$

D. $[a, \infty), a \in [2, 4]$

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

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

$$17 = \ln \sqrt[7]{\frac{14}{e^{6x}}}$$

A. $x \in [-5.8, -4.2]$

B. $x \in [-5.2, -0.6]$

C. $x \in [-21, -18.1]$

D. There is no Real solution to the equation.

E. None of the above.

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

$$\log_4(-3x + 5) + 5 = 3$$

A. $x \in [-3.35, 5.65]$

B. $x \in [-21.67, -17.67]$

C. $x \in [-6.67, -0.67]$

D. $x \in [-7, -6]$

E. There is no Real solution to the equation.

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

$$\log_4(-3x + 5) + 6 = 2$$

A. $x \in [-6.67, 0.33]$

B. $x \in [-85.67, -79.67]$

C. $x \in [-0.33, 5.67]$

D. $x \in [-91, -85]$

E. There is no Real solution to the equation.

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

$$f(x) = e^{x-6} - 5$$

A. $(a, \infty), a \in [-2, 7]$

B. $(-\infty, a), a \in [-12, 2]$

C. $[a, \infty), a \in [-2, 7]$

D. $(-\infty, a], a \in [-12, 2]$

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