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

$$f(x) = \log_2 (x + 3) - 5$$

   A. $(-\infty, a), a \in [0.3, 3.5]$

   B. $(-\infty, a], a \in [4.1, 9]$

   C. $[a, \infty), a \in [-5.4, -3.6]$

   D. $(a, \infty), a \in [-3.6, -1.2]$

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

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

$$\log_4 (2x + 6) + 4 = 3$$

   A. $x \in [28.63, 29.41]$

   B. $x \in [-2.58, -1.62]$

   C. $x \in [-3.31, -2.76]$

   D. $x \in [3.28, 3.83]$

   E. There is no Real solution to the equation.

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

$$f(x) = e^{x-5} + 9$$

   A. $[a, \infty), a \in [-14, -4]$

   B. $(a, \infty), a \in [-14, -4]$

   C. $(-\infty, a), a \in [7, 11]$

   D. $(-\infty, a], a \in [7, 11]$

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

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

$$f(x) = -\log_2 (x-1) + 5$$

A. $(-\infty, a), a \in [3.8, 6]$

B. $[a, \infty), a \in [-3.7, -0.2]$

C. $[a, \infty), a \in [-0.7, 1.9]$

D. $(-\infty, a), a \in [-7.7, -3.6]$

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

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

$$20 = \sqrt[4]{\frac{15}{e^{8x}}}$$

A. $x \in [0.92, 1.84]$

B. $x \in [-10.75, -10.15]$

C. $x \in [-0.91, -0.02]$

D. There is no Real solution to the equation.

E. None of the above.

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

$$\log_3 (-2x + 7) + 4 = 2$$

A. $x \in [-3.7, -0.4]$

B. $x \in [-0.8, 0.8]$

C. $x \in [2.9, 4.6]$

D. $x \in [6.9, 10.5]$

E. There is no Real solution to the equation.

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

$$7 = \ln \sqrt[7]{\frac{8}{e^{9x}}}$$

A. $x \in [-2.72, -1.63]$

B. $x \in [-5.41, -5.16]$

C. $x \in [-1.68, -0.85]$

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).

$$3^{-3x+2} = \left(\frac{1}{343}\right)^{-4x+4}$$

A. $x \in [1, 3.6]$

B. $x \in [-26.6, -25.1]$

C. $x \in [0.2, 1.2]$

D. $x \in [-1.4, 0.5]$

E. There is no Real solution to the equation.

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

$$f(x) = -e^{x+7} + 5$$

A. $[a, \infty), a \in [-6, -1]$

B. $(-\infty, a], a \in [5, 11]$

C. $(a, \infty), a \in [-6, -1]$

D. $(-\infty, a), a \in [5, 11]$

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

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

$$2^{3x+2} = \left(\frac{1}{27}\right)^{4x+4}$$

   A. $x \in [14.45, 14.65]$

   B. $x \in [-0.65, 0.38]$

   C. $x \in [-2.63, -1.21]$

   D. $x \in [-1.4, -0.55]$

   E. There is no Real solution to the equation.