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

$$f(x) = -\log_2(x+6) + 3$$

A. $(-\infty, a), a \in [3.7, 7.2]$

B. $(a, \infty), a \in [-7.3, -5.7]$

C. $[a, \infty), a \in [2.1, 4.9]$

D. $(-\infty, a], a \in [-3.6, -2.8]$

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

---

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

$$\log_4(-4x+8) + 4 = 2$$

A. $x \in [-4, 0]$

B. $x \in [-10, -4]$

C. $x \in [-0.02, 7.98]$

D. $x \in [-4, 0]$

E. There is no Real solution to the equation.

---

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

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

A. $x \in [1.99, 7.99]$

B. $x \in [-5.33, -2.33]$

C. $x \in [-27, -22]$

D. $x \in [-30, -26]$

E. There is no Real solution to the equation.

---

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

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

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

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

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

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

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

---

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

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

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

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

C. $(-\infty, a], a \in [-7, -3]$

D. $(-\infty, a), a \in [-7, -3]$

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

---

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

$$2^{5x+4} = 9^{2x-4}$$

A. $x \in [-3.67, 0.33]$

B. $x \in [-5.85, -2.85]$

C. $x \in [10.45, 15.45]$

D. $x \in [7.61, 9.61]$

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).

$$14 = \sqrt[7]{\frac{22}{e^{4x}}}$$

A. $x \in [-6.85, -1.85]$

B. $x \in [-3.55, 3.45]$

C. $x \in [-27.27, -23.27]$

D. There is no Real solution to the equation.

E. None of the above.

---

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

$$f(x) = -\log_2(x + 7) + 7$$

A. $(-\infty, a), a \in [5, 8]$

B. $(a, \infty), a \in [-7, -5]$

C. $(-\infty, a], a \in [-7, -5]$

D. $[a, \infty), a \in [5, 8]$

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

---

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

$$20 = \sqrt[4]{\frac{12}{e^{7x}}}$$

A. $x \in [-13.3, -11.7]$

B. $x \in [-0.7, 0.8]$

C. $x \in [-2, -0.6]$

D. There is no Real solution to the equation.

E. None of the above.

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

$$4^{-2x-4} = \left(\frac{1}{125}\right)^{-4x+5}$$

A. $x \in [-1.4, 0.7]$

B. $x \in [-11, -8.8]$

C. $x \in [3.4, 6.4]$

D. $x \in [0, 2.3]$

E. There is no Real solution to the equation.