

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

$$\log_4(-3x + 7) + 5 = 3$$

- A.  $x \in [-2.69, 7.31]$
  - B.  $x \in [-16.67, -5.67]$
  - C.  $x \in [-19, -14]$
  - D.  $x \in [-7, -1]$
  - E. There is no Real solution to the equation.
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2. Solve the equation for  $x$  and choose the interval that contains  $x$  (if it exists).

$$21 = \ln \sqrt[6]{\frac{21}{e^{4x}}}$$

- A.  $x \in [-31.74, -29.74]$
  - B.  $x \in [-6.33, -4.33]$
  - C.  $x \in [-9.74, -7.74]$
  - D. There is no Real solution to the equation.
  - E. None of the above.
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3. Which of the following intervals describes the Range of the function below?

$$f(x) = e^{x-5} - 8$$

- A.  $[a, \infty), a \in [-15, -5]$
  - B.  $(a, \infty), a \in [-15, -5]$
  - C.  $(-\infty, a), a \in [8, 11]$
  - D.  $(-\infty, a], a \in [8, 11]$
  - E.  $(-\infty, \infty)$
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4. Which of the following intervals describes the Range of the function below?

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

- A.  $[a, \infty), a \in [-12, -5]$
  - B.  $(-\infty, a), a \in [8, 12]$
  - C.  $(-\infty, a], a \in [8, 12]$
  - D.  $(a, \infty), a \in [-12, -5]$
  - E.  $(-\infty, \infty)$
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5. Which of the following intervals describes the Domain of the function below?

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

- A.  $(a, \infty), a \in [4.2, 7.4]$
  - B.  $(-\infty, a], a \in [0.9, 3.3]$
  - C.  $[a, \infty), a \in [-4.7, -2.2]$
  - D.  $(-\infty, a), a \in [-7.9, -4.7]$
  - E.  $(-\infty, \infty)$
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6. Solve the equation for  $x$  and choose the interval that contains  $x$  (if it exists).

$$19 = \ln \sqrt[5]{\frac{14}{e^{6x}}}$$

- A.  $x \in [14.39, 18.39]$
  - B.  $x \in [-5.89, -1.89]$
  - C.  $x \in [-7.89, -3.89]$
  - D. There is no Real solution to the equation.
  - E. None of the above.
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7. Which of the following intervals describes the Domain of the function below?

$$f(x) = \log_2(x - 9) + 1$$

- A.  $(-\infty, a), a \in [-14, -5]$
  - B.  $(-\infty, a], a \in [-5, 0]$
  - C.  $(a, \infty), a \in [5, 10]$
  - D.  $[a, \infty), a \in [0, 4]$
  - E.  $(-\infty, \infty)$
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8. Solve the equation for  $x$  and choose the interval that contains the solution (if it exists).

$$4^{-5x-3} = 49^{-2x+4}$$

- A.  $x \in [5.21, 13.21]$
  - B.  $x \in [21.15, 25.15]$
  - C.  $x \in [-6.58, -3.58]$
  - D.  $x \in [-3.33, -0.33]$
  - E. There is no Real solution to the equation.
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9. Solve the equation for  $x$  and choose the interval that contains the solution (if it exists).

$$5^{4x+2} = \left(\frac{1}{27}\right)^{-2x-5}$$

- A.  $x \in [0.21, 3.21]$
  - B.  $x \in [41.48, 48.48]$
  - C.  $x \in [-4.17, 1.83]$
  - D.  $x \in [-87.15, -82.15]$
  - E. There is no Real solution to the equation.
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10. Solve the equation for  $x$  and choose the interval that contains the solution (if it exists).

$$\log_3(4x + 7) + 6 = 2$$

- A.  $x \in [-0.5, 8.5]$
  - B.  $x \in [-14.25, -13.25]$
  - C.  $x \in [-20.75, -14.75]$
  - D.  $x \in [-1.75, 0.25]$
  - E. There is no Real solution to the equation.
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