1. Find the inverse of the function below (if it exists). Then, evaluate the inverse at $x = -10$ and choose the interval the $f^{-1}(-10)$ belongs to.

$$f(x) = \sqrt[3]{3x + 4}$$

A. $f^{-1}(-10) \in [-336.8, -332.9]$

B. $f^{-1}(-10) \in [-332.2, -330.5]$

C. $f^{-1}(-10) \in [330.5, 333]$

D. $f^{-1}(-10) \in [334.6, 336.7]$

E. The function is not invertible for all Real numbers.

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2. Subtract the following functions, then choose the domain of the resulting function from the list below.

$$f(x) = \frac{5}{5x - 16} \text{ and } g(x) = \frac{1}{5x + 32}$$

A. The domain is all Real numbers except $x = a$, where $a \in [-6.33, -0.33]$

B. The domain is all Real numbers greater than or equal to $x = a$, where $a \in [0.2, 4.2]$

C. The domain is all Real numbers less than or equal to $x = a$, where $a \in [-2.75, -0.75]$

D. The domain is all Real numbers except $x = a$ and $x = b$, where $a \in [1.2, 10.2]$ and $b \in [-7.4, -2.4]$

E. The domain is all Real numbers.

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3. Determine whether the function below is 1-1.

$$f(x) = (5x + 26)^3$$

A. No, because the range of the function is not $(-\infty, \infty)$.

B. No, because there is an x-value that goes to 2 different y-values.

C. No, because the domain of the function is not $(-\infty, \infty)$.

D. No, because there is a y-value that goes to 2 different x-values.

E. Yes, the function is 1-1.

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4. Find the inverse of the function below. Then, evaluate the inverse at $x = 9$ and choose the interval that $f^{-1}(9)$ belongs to.

$$f(x) = \ln(x - 2) - 5$$

A. $f^{-1}(9) \in [1202595.28, 1202603.28]$

B. $f^{-1}(9) \in [54.6, 61.6]$

C. $f^{-1}(9) \in [1202606.28, 1202608.28]$

D. $f^{-1}(9) \in [59867.14, 59870.14]$

E. $f^{-1}(9) \in [1090.63, 1092.63]$

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5. Find the inverse of the function below. Then, evaluate the inverse at $x = 7$ and choose the interval that $f^{-1}(7)$ belongs to.

$$f(x) = e^{x+3} - 5$$

A. $f^{-1}(7) \in [-1.25, -0.49]$

B. $f^{-1}(7) \in [-4.92, -3.94]$

C. $f^{-1}(7) \in [-3.18, -2.2]$

D. $f^{-1}(7) \in [5.44, 5.58]$

E. $f^{-1}(7) \in [-4.04, -3.46]$

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6. Determine whether the function below is 1-1.

$$f(x) = 30x^2 - 2x - 572$$

A. No, because there is a y-value that goes to 2 different x-values.

B. Yes, the function is 1-1.

C. No, because there is an x-value that goes to 2 different y-values.

D. No, because the domain of the function is not $(-\infty, \infty)$.

E. No, because the range of the function is not $(-\infty, \infty)$.

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7. Multiply the following functions, then choose the domain of the resulting function from the list below.

$$f(x) = 8x^3 + 3x^2 + 4x + 6 \text{ and } g(x) = 2x$$

A. The domain is all Real numbers less than or equal to $x = a$, where $a \in [-4, 1]$

B. The domain is all Real numbers except $x = a$, where $a \in [-7.83, -2.83]$

C. The domain is all Real numbers greater than or equal to $x = a$, where $a \in [-6, 0]$

D. The domain is all Real numbers except $x = a$ and $x = b$, where $a \in [-9.83, 1.17]$ and $b \in [3.4, 9.4]$

E. The domain is all Real numbers.

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8. Choose the interval below that f composed with g at $x = 1$ is in.

$$f(x) = 3x^3 - 4x^2 + x \text{ and } g(x) = -3x^3 + 2x^2 + 4x - 3$$

A. $(f \circ g)(1) \in [-5.96, -4.16]$

B. $(f \circ g)(1) \in [-0.43, 1.14]$

C. $(f \circ g)(1) \in [1.83, 2.2]$

D. $(f \circ g)(1) \in [-4.58, -1.54]$

E. It is not possible to compose the two functions.

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9. Choose the interval below that f composed with g at $x = -1$ is in.

$$f(x) = -x^3 - 4x^2 + 2x + 3 \text{ and } g(x) = 4x^3 - 2x^2 - x$$

A. $(f \circ g)(-1) \in [14, 24]$

B. $(f \circ g)(-1) \in [2, 9]$

C. $(f \circ g)(-1) \in [-44, -36]$

D. $(f \circ g)(-1) \in [-49, -42]$

E. It is not possible to compose the two functions.

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10. Find the inverse of the function below (if it exists). Then, evaluate the inverse at $x = -12$ and choose the interval that $f^{-1}(-12)$ belongs to.

$$f(x) = 2x^2 + 3$$

A. $f^{-1}(-12) \in [3.98, 5.38]$

B. $f^{-1}(-12) \in [2.45, 3.1]$

C. $f^{-1}(-12) \in [1.66, 2.17]$

D. $f^{-1}(-12) \in [3.65, 4.12]$

E. The function is not invertible for all Real numbers.
