1. Find the inverse of the function below (if it exists). Then, evaluate the inverse at $x = 14$ and choose the interval that $f^{-1}(14)$ belongs to.

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

   A. $f^{-1}(14) \in [2.4, 3.69]$

   B. $f^{-1}(14) \in [2.3, 2.6]$

   C. $f^{-1}(14) \in [3.69, 4.71]$

   D. $f^{-1}(14) \in [5.04, 5.78]$

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

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

$$f(x) = \sqrt{-6x + 33}$$

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

   B. Yes, the function is 1-1.

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

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

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

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

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

   A. $(f \circ g)(1) \in [9, 12]$

   B. $(f \circ g)(1) \in [17, 25]$

   C. $(f \circ g)(1) \in [71, 76]$

   D. $(f \circ g)(1) \in [63, 68]$

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

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4. Add the following functions, then choose the domain of the resulting function from the list below.

$$f(x) = \sqrt{3x - 21} \text{ and } g(x) = 3x^3 + 8x^2 + 6x$$

A. The domain is all Real numbers less than or equal to $x = a$, where $a \in [-0.5, 9.5]$

B. The domain is all Real numbers except $x = a$, where $a \in [3.67, 14.67]$

C. The domain is all Real numbers greater than or equal to $x = a$, where $a \in [2, 9]$

D. The domain is all Real numbers except $x = a$ and $x = b$, where $a \in [-12.67, -2.67]$ and $b \in [1.17, 12.17]$

E. The domain is all Real numbers.

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5. Find the inverse of the function below. Then, evaluate the inverse at $x = 8$ and choose the interval that $f^{-1}(8)$ belongs to.

$$f(x) = \ln(x - 4) - 5$$

A. $f^{-1}(8) \in [442407.39, 442415.39]$

B. $f^{-1}(8) \in [162742.79, 162756.79]$

C. $f^{-1}(8) \in [442417.39, 442419.39]$

D. $f^{-1}(8) \in [20.09, 28.09]$

E. $f^{-1}(8) \in [47.6, 50.6]$

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

$$f(x) = \frac{4}{5x - 34} \text{ and } g(x) = \frac{1}{5x - 21}$$

A. The domain is all Real numbers greater than or equal to $x = a$, where $a \in [-8, 2]$

B. The domain is all Real numbers less than or equal to $x = a$, where $a \in [-5.2, -4.2]$

C. The domain is all Real numbers except $x = a$, where $a \in [-9.2, 2.8]$

D. The domain is all Real numbers except $x = a$ and $x = b$, where $a \in [5.8, 7.8]$ and $b \in [-1.8, 14.2]$

E. The domain is all Real numbers.

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

$$f(x) = 16x^2 + 136x + 289$$

A. Yes, the function is 1-1.

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

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

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

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

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8. Find the inverse of the function below (if it exists). Then, evaluate the inverse at $x = 13$ and choose the interval the $f^{-1}(13)$ belongs to.

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

A. $f^{-1}(13) \in [-734, -733.1]$

B. $f^{-1}(13) \in [-732.5, -730]$

C. $f^{-1}(13) \in [732.9, 735.1]$

D. $f^{-1}(13) \in [729.8, 732.7]$

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

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

$$f(x) = \ln(x + 5) + 4$$

A. $f^{-1}(7) \in [12.5, 18.2]$

B. $f^{-1}(7) \in [22.8, 27]$

C. $f^{-1}(7) \in [59867.2, 59870.4]$

D. $f^{-1}(7) \in [162756.3, 162759.2]$

E. $f^{-1}(7) \in [10, 15]$

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

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

A. $(f \circ g)(-1) \in [32, 36]$

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

C. $(f \circ g)(-1) \in [44, 45]$

D. $(f \circ g)(-1) \in [9, 16]$

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