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

$$f(x) = \sqrt[3]{5x - 4}$$

A. $f^{-1}(-14) \in [549.35, 550.03]$

B. $f^{-1}(-14) \in [547.73, 548.1]$

C. $f^{-1}(-14) \in [-548.94, -547.75]$

D. $f^{-1}(-14) \in [-549.82, -549.15]$

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

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

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

A. $(f \circ g)(-1) \in [62, 67]$

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

C. $(f \circ g)(-1) \in [6, 18]$

D. $(f \circ g)(-1) \in [56, 59]$

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

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

$$f(x) = e^{x+2} + 3$$

A. $f^{-1}(8) \in [4.74, 4.85]$

B. $f^{-1}(8) \in [5.36, 5.45]$

C. $f^{-1}(8) \in [-0.49, -0.34]$

D. $f^{-1}(8) \in [5.3, 5.38]$

E. $f^{-1}(8) \in [3.59, 3.66]$

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

$$f(x) = 25x^2 - 130x + 169$$

   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 there is an x-value that goes to 2 different y-values.
   D. No, because the range of the function is not $(-\infty, \infty)$.
   E. No, because the domain of the function is not $(-\infty, \infty)$.

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

$$f(x) = 25x^2 + 110x + 121$$

   A. No, because the domain of the function is not $(-\infty, \infty)$.
   B. No, because there is a y-value that goes to 2 different x-values.
   C. Yes, the function is 1-1.
   D. No, because the range of the function is not $(-\infty, \infty)$.
   E. No, because there is an x-value that goes to 2 different y-values.

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

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

   A. $(f \circ g)(1) \in [68, 73]$
   B. $(f \circ g)(1) \in [62, 66]$
   C. $(f \circ g)(1) \in [5, 12]$
   D. $(f \circ g)(1) \in [-1, 2]$
   E. It is not possible to compose the two functions.

7. Find the inverse of the function below (if it exists). Then, evaluate the inverse at $x = 15$ and choose the interval that $f^{-1}(15)$ belongs to.

$$f(x) = 4x^2 + 2$$

A. $f^{-1}(15) \in [3.75, 3.82]$

B. $f^{-1}(15) \in [1.72, 1.95]$

C. $f^{-1}(15) \in [1.89, 2.4]$

D. $f^{-1}(15) \in [2.7, 2.87]$

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

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

$$f(x) = e^{x+4} + 5$$

A. $f^{-1}(8) \in [-2.97, -2.87]$

B. $f^{-1}(8) \in [6.35, 6.44]$

C. $f^{-1}(8) \in [7.52, 7.57]$

D. $f^{-1}(8) \in [7.46, 7.51]$

E. $f^{-1}(8) \in [5.03, 5.16]$

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

$$f(x) = \sqrt{5x - 16} \text{ and } g(x) = 5x^3 + 4x^2 + 5x + 1$$

A. The domain is all Real numbers except $x = a$, where $a \in [-8.75, -0.75]$

B. The domain is all Real numbers less than or equal to $x = a$, where $a \in [-11, -2]$

C. The domain is all Real numbers greater than or equal to $x = a$, where $a \in [0.2, 5.2]$

D. The domain is all Real numbers except $x = a$ and $x = b$, where $a \in [-9.67, -1.67]$ and $b \in [-4.67, -2.67]$

E. The domain is all Real numbers.

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

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

A. The domain is all Real numbers less than or equal to $x = a$, where $a \in [-4.25, -1.25]$

B. The domain is all Real numbers greater than or equal to $x = a$, where $a \in [-10.25, -2.25]$

C. The domain is all Real numbers except $x = a$, where $a \in [-9.6, -4.6]$

D. The domain is all Real numbers except $x = a$ and $x = b$, where $a \in [3.2, 6.2]$ and $b \in [-0.8, 7.2]$

E. The domain is all Real numbers.
