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

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

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

   B. $(f \circ g)(-1) \in [-32, -25]$

   C. $(f \circ g)(-1) \in [-15, -4]$

   D. $(f \circ g)(-1) \in [-25, -12]$

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

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

$$f(x) = (4x - 26)^3$$

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

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

   E. Yes, the function is 1-1.

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

$$f(x) = -30x^2 - 237x - 405$$

   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 domain 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 range of the function is not $(-\infty, \infty)$.

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

$$f(x) = \frac{5}{4x - 25} \text{ and } g(x) = 7x^2 + 7x + 3$$

   A. The domain is all Real numbers except $x = a$, where $a \in [6.25, 11.25]$

   B. The domain is all Real numbers less than or equal to $x = a$, where $a \in [-1, 8]$

   C. The domain is all Real numbers greater than or equal to $x = a$, where $a \in [-10.5, -2.5]$

   D. The domain is all Real numbers except $x = a$ and $x = b$, where $a \in [1.33, 8.33]$ and $b \in [-4.4, 4.6]$

   E. The domain is all Real numbers.

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

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

   A. $f^{-1}(10) \in [149.41, 158.41]$

   B. $f^{-1}(10) \in [407.43, 410.43]$

   C. $f^{-1}(10) \in [3269020.37, 3269025.37]$

   D. $f^{-1}(10) \in [392.43, 401.43]$

   E. $f^{-1}(10) \in [1202608.28, 1202615.28]$

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

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

   A. $(f \circ g)(-1) \in [-10, -4]$

   B. $(f \circ g)(-1) \in [-3, 1]$

   C. $(f \circ g)(-1) \in [-22, -14]$

D. $(f \circ g)(-1) \in [2, 12]$

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

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

$$f(x) = \ln(x + 5) - 3$$

A. $f^{-1}(10) \in [1091.63, 1092.63]$

B. $f^{-1}(10) \in [3269014.37, 3269017.37]$

C. $f^{-1}(10) \in [442413.39, 442420.39]$

D. $f^{-1}(10) \in [142.41, 152.41]$

E. $f^{-1}(10) \in [442404.39, 442411.39]$

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8. 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.

$$f(x) = 5x^2 + 2$$

A. $f^{-1}(-12) \in [4.65, 4.78]$

B. $f^{-1}(-12) \in [1, 1.65]$

C. $f^{-1}(-12) \in [3.55, 3.95]$

D. $f^{-1}(-12) \in [1.67, 1.76]$

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

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

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

A. $f^{-1}(-15) \in [844.42, 845.34]$

B. $f^{-1}(-15) \in [-845.53, -843.31]$

C. $f^{-1}(-15) \in [-843.52, -842.62]$

D. $f^{-1}(-15) \in [842.23, 844.38]$

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

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

$$f(x) = \sqrt{6x + 24} \text{ and } g(x) = x^4 + 9x^3 + 8x^2 + x + 6$$

A. The domain is all Real numbers less than or equal to $x = a$, where $a \in [0.75, 6.75]$

B. The domain is all Real numbers greater than or equal to $x = a$, where $a \in [-7, -3]$

C. The domain is all Real numbers except $x = a$, where $a \in [3.25, 5.25]$

D. The domain is all Real numbers except $x = a$ and $x = b$, where $a \in [-12.25, -5.25]$ and $b \in [-6.4, -4.4]$

E. The domain is all Real numbers.