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

$$f(x) = (3x + 18)^3$$

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

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

C. Yes, the function is 1-1.

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

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

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

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

A. $(f \circ g)(1) \in [58, 61]$

B. $(f \circ g)(1) \in [33, 38]$

C. $(f \circ g)(1) \in [27, 32]$

D. $(f \circ g)(1) \in [65, 75]$

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 $x = 9$ and choose the interval that $f^{-1}(9)$ belongs to.

$$f(x) = \ln(x - 4) - 2$$

A. $f^{-1}(9) \in [59865, 59875]$

B. $f^{-1}(9) \in [442410, 442413]$

C. $f^{-1}(9) \in [144, 150]$

D. $f^{-1}(9) \in [59876, 59889]$

E. $f^{-1}(9) \in [1095, 1101]$

4. Find the inverse of the function below (if it exists). Then, evaluate the inverse at $x = 11$ and choose the interval that $f^{-1}(11)$ belongs to.

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

A. $f^{-1}(11) \in [4.53, 5.21]$

B. $f^{-1}(11) \in [3.22, 3.77]$

C. $f^{-1}(11) \in [1.5, 1.96]$

D. $f^{-1}(11) \in [2.07, 3.59]$

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

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

$$f(x) = \frac{1}{5x - 19} \text{ and } g(x) = 5x^2 + 8x + 2$$

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 $a \in [-8, 1]$

C. The domain is all Real numbers except $x = a$, where $a \in [0, 8]$

D. The domain is all Real numbers except $x = a$ and $x = b$, where $a \in [4, 14]$ and $b \in [2, 12]$

E. The domain is all Real numbers.