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

$$f(x) = \frac{4}{5x + 18} \text{ and } g(x) = 3x^3 + 8x^2 + 3$$

A. The domain is all Real numbers except $x = a$, where $a \in [-5, 0]$

B. The domain is all Real numbers less than or equal to $x = a$, where $a \in [-2, 7]$

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

D. The domain is all Real numbers except $x = a$ and $x = b$, where $a \in [-9, -5]$ and $b \in [4, 8]$

E. The domain is all Real numbers.

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

$$f(x) = \ln(x + 4) - 3$$

A. $f^{-1}(7) \in [14, 20]$

B. $f^{-1}(7) \in [22017, 22026]$

C. $f^{-1}(7) \in [22024, 22031]$

D. $f^{-1}(7) \in [59869, 59873]$

E. $f^{-1}(7) \in [45, 58]$

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

$$f(x) = -25x^2 + 155x - 198$$

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

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

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

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

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

A. $(f \circ g)(-2) \in [-15, -10]$

B. $(f \circ g)(-2) \in [-72, -65]$

C. $(f \circ g)(-2) \in [-8, 1]$

D. $(f \circ g)(-2) \in [-67, -61]$

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

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5. 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.

$$f(x) = \sqrt[3]{5x - 2}$$

A. $f^{-1}(-13) \in [-439.75, -437.86]$

B. $f^{-1}(-13) \in [439.68, 439.95]$

C. $f^{-1}(-13) \in [-439.93, -439.77]$

D. $f^{-1}(-13) \in [438.89, 439.12]$

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