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

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

A. $f^{-1}(5) \in [-4.8, -1.5]$

B. $f^{-1}(5) \in [4.8, 8.5]$

C. $f^{-1}(5) \in [4.8, 8.5]$

D. $f^{-1}(5) \in [3.2, 4.6]$

E. $f^{-1}(5) \in [3.2, 4.6]$

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

$$f(x) = \sqrt{-5x - 16}$$

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

E. No, because the range 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.

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

A. $(f \circ g)(1) \in [-14.8, -11.8]$

B. $(f \circ g)(1) \in [-11, -6.9]$

C. $(f \circ g)(1) \in [-4.4, -2]$

D. $(f \circ g)(1) \in [-7.5, -4.7]$

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

4. 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.

$$f(x) = 5x^2 + 3$$

A. $f^{-1}(-12) \in [0.44, 1.37]$

B. $f^{-1}(-12) \in [3.67, 4.05]$

C. $f^{-1}(-12) \in [1.57, 2]$

D. $f^{-1}(-12) \in [5.47, 5.84]$

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.

$$f(x) = 6x + 9 \text{ and } g(x) = \frac{2}{5x - 24}$$

A. The domain is all Real numbers except $x = a$, where $a \in [1, 11]$

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

C. The domain is all Real numbers less than or equal to $x = a$, where $a \in [-5, 0]$

D. The domain is all Real numbers except $x = a$ and $x = b$, where $a \in [-7, -3]$ and $b \in [-13, -2]$

E. The domain is all Real numbers.