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

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

A. $(f \circ g)(-1) \in [-0.4, 1.3]$

B. $(f \circ g)(-1) \in [-9.6, -7.4]$

C. $(f \circ g)(-1) \in [2.3, 9.1]$

D. $(f \circ g)(-1) \in [-3.5, -2.7]$

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

---

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

$$f(x) = \sqrt{6x - 36}$$

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

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

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

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

E. Yes, the function is 1-1.

---

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

$$f(x) = \ln(x - 5) + 2$$

A. $f^{-1}(7) \in [162755, 162760]$

B. $f^{-1}(7) \in [142, 144]$

C. $f^{-1}(7) \in [151, 160]$

D. $f^{-1}(7) \in [8102, 8111]$

E. $f^{-1}(7) \in [4, 14]$

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

$$f(x) = \frac{4}{3x - 19} \text{ and } g(x) = \frac{1}{5x - 28}$$

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

B. The domain is all Real numbers except $x = a$, where $a \in [-9, -5]$

C. The domain is all Real numbers greater than or equal to $x = a$, where $a \in [5, 8]$

D. The domain is all Real numbers except $x = a$ and $x = b$, where $a \in [1, 8]$ and $b \in [5, 7]$

E. The domain is all Real numbers.

5. Find the inverse of the function below (if it exists). Then, evaluate the inverse at $x = 12$ and choose the interval the $f^{-1}(12)$ belongs to.

$$f(x) = \sqrt[3]{4x + 2}$$

A. $f^{-1}(12) \in [432.46, 432.66]$

B. $f^{-1}(12) \in [-431.9, -431.36]$

C. $f^{-1}(12) \in [-433.06, -432.36]$

D. $f^{-1}(12) \in [431.35, 431.66]$

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