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

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

A. $(f \circ g)(1) \in [84, 88]$

B. $(f \circ g)(1) \in [89, 98]$

C. $(f \circ g)(1) \in [7, 16]$

D. $(f \circ g)(1) \in [-4, 6]$

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

2. Find the inverse of the function below. Then, evaluate the inverse at $x = 8$ and choose the interval that $f^{-1}(8)$ belongs to.

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

A. $f^{-1}(8) \in [-2.81, -0.67]$

B. $f^{-1}(8) \in [4.56, 6.64]$

C. $f^{-1}(8) \in [-1.34, -0.52]$

D. $f^{-1}(8) \in [-2.81, -0.67]$

E. $f^{-1}(8) \in [-1.34, -0.52]$

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

$$f(x) = \sqrt{-5x + 17} \text{ and } g(x) = 8x^2 + 9x + 3$$

A. The domain is all Real numbers greater than or equal to $x = a$, where $a \in [-9, 3]$

B. The domain is all Real numbers except $x = a$, where $a \in [1, 7]$

C. The domain is all Real numbers less than or equal to $x = a$, where $a \in [0, 7]$

D. The domain is all Real numbers except $x = a$ and $x = b$, where $a \in [-6, -1]$ and $b \in [2, 6]$

E. The domain is all Real numbers.

---

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

$$f(x) = 18x^2 + 105x - 375$$

A. Yes, the function is 1-1.

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

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

---

5. 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.

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

A. $f^{-1}(15) \in [674.16, 674.66]$

B. $f^{-1}(15) \in [-675.16, -674.53]$

C. $f^{-1}(15) \in [-675.99, -675.21]$

D. $f^{-1}(15) \in [675.36, 675.4]$

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