

Name: _____

Inverse of Functions

1) If $f(x) = x + 3$ and $g(x) = x - 3$, then evaluate

i) $(f \circ g)(x) =$ _____

ii) $(g \circ f)(x) =$ _____

iii) Are the functions $f(x)$ and $g(x)$ inverses? _____

2) If $f(x) = \frac{4x - 1}{2}$ and $g(x) = \frac{x + 1}{4}$, then evaluate

i) $(f \circ g)(x) =$ _____

ii) $(g \circ f)(x) =$ _____

iii) Are the functions $f(x)$ and $g(x)$ inverses? _____

3) Determine algebraically whether $f(x) = 6 \log_e x$ and $g(x) = e^{\frac{x}{6}}$ are inverses of each other.

4) Determine algebraically whether $f(x) = -8x^3 + 7$ and $g(x) = \sqrt[3]{7 - x}$ are inverses of each other.

Inverse of Functions

1) If $f(x) = x + 3$ and $g(x) = x - 3$, then evaluate

i) $(f \circ g)(x) = \underline{\quad x \quad}$

ii) $(g \circ f)(x) = \underline{\quad x \quad}$

iii) Are the functions $f(x)$ and $g(x)$ inverses? Yes

2) If $f(x) = \frac{4x-1}{2}$ and $g(x) = \frac{x+1}{4}$, then evaluate

i) $(f \circ g)(x) = \underline{\quad \frac{x}{2} \quad}$

ii) $(g \circ f)(x) = \underline{\quad \frac{4x+1}{8} \quad}$

iii) Are the functions $f(x)$ and $g(x)$ inverses? No

3) Determine algebraically whether $f(x) = 6 \log_e x$ and $g(x) = e^{\frac{x}{6}}$ are inverses of each other.

$$(f \circ g)(x) = x$$

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$f(x)$ and $g(x)$ are inverses of each other.

4) Determine algebraically whether $f(x) = -8x^3 + 7$ and $g(x) = \sqrt[3]{7-x}$ are inverses of each other.

$$(f \circ g)(x) = 8x - 49$$

$$(g \circ f)(x) = 2x$$

$$(f \circ g)(x) \neq (g \circ f)(x) \neq x$$

$f(x)$ and $g(x)$ are not inverses of each other.