Composite and Inverse Functions Worksheet

I Do (Teacher Model)

The functions f and g are defined as

$$f(x) = 5x^2 - 10x + 7 \text{where } x \geq 1$$
$$g(x) = 7x - 6$$

(a)

Find $fg(2)$.

(b)

Express the inverse function f^{-1} in the form

$$f^{-1}(x) = \cdots$$

We Do (Guided Practice)

The functions f and g are defined as

$$f(x) = 3x^2 - 6x + 4 \text{where } x \geq 1$$
$$g(x) = 5x - 2$$

(a)

Find $fg(2)$.

(b)

Express the inverse function f^{-1} in the form

$$f^{-1}(x) = \cdots$$

You Do (Independent Practice)

The functions f and g are defined as

$$f(x) = 2x^2 - 4x + 8 \text{where } x \geq 1$$
$$g(x) = 4x - 1$$

(a)

Find $fg(3)$.

(b)

Express the inverse function f^{-1} in the form

$$f^{-1}(x) = \cdots$$

Challenge 1

The functions f and g are defined as

$$f(x) = 4x^2 - 16x + 9 \text{where } x \geq 2$$
$$g(x) = 3x + 1$$

(a)

Find $gf(3)$.

(b)

Express the inverse function f^{-1} in the form

$$f^{-1}(x) = \cdots$$

Challenge 2

The functions f and g are defined as

$$f(x) = 6x^2 - 36x + 20 \text{where } x \geq 3$$
$$g(x) = 2x + 5$$

(a)

Find $fg(2)$.

(b)

Express the inverse function f^{-1} in the form

$$f^{-1}(x) = \cdots$$

Answers

I Do

(a) $\boxed{247}$

(b) $\boxed{f^{-1}(x) = 1 + \sqrt{\frac{x-2}{5}}}$

We Do

(a) $\boxed{148}$

(b) $\boxed{f^{-1}(x) = 1 + \sqrt{\frac{x-1}{3}}}$

You Do

(a) $\boxed{206}$

(b) $\boxed{f^{-1}(x) = 1 + \sqrt{\frac{x-6}{2}}}$

Challenge 1

(a) $\boxed{-8}$

(b) $\boxed{f^{-1}(x) = 2 + \sqrt{\frac{x+7}{4}}}$

Challenge 2

(a) $\boxed{182}$

(b) $\boxed{f^{-1}(x) = 3 + \sqrt{\frac{x+34}{6}}}$

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