

Math Sheet

Name _____ Score _____ / 14 Teacher _____ Date _____

Logarithmic Function Inverses

Find the inverse function. Use the printed domain to keep the inverse real and single-valued.

1. Find the inverse function.

$$f(x) = \log_8(7 \cdot x)$$

Given domain: $(0, \text{infinity})$

2. Find the inverse function.

$$f(x) = 7 \cdot \log_8(8 \cdot x)$$

Given domain: $(0, \text{infinity})$

3. Find the inverse function.

$$f(x) = \log_8(6 \cdot x^2)$$

Given domain: $(0, \text{infinity})$

4. Find the inverse function.

$$f(x) = \log_9(2 \cdot x + 5)$$

Given domain: $(\frac{-5}{2}, \text{infinity})$

5. Find the inverse function.

$$f(x) = \log_4(8 \cdot x^2 + 6)$$

Given domain: $[0, \text{infinity})$

6. Find the inverse function.

$$f(x) = \log_2(x^2)$$

Given domain: $(0, \text{infinity})$

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Logarithmic Function Inverses

Find the inverse function. Use the printed domain to keep the inverse real and single-valued.

7. Find the inverse function.

$$f(x) = \log_6(-5 - x)$$

Given domain: $(-\infty, 0)$

8. Find the inverse function.

$$f(x) = 6 \cdot \log_8(-8 - x)$$

Given domain: $(-\infty, 0)$

9. Find the inverse function.

$$f(x) = \log_2(-6 - x^3)$$

Given domain: $(-\infty, \sqrt[3]{0})$

10. Find the inverse function.

$$f(x) = \log_2(-2 \cdot x + 3)$$

Given domain: $(-\infty, \frac{3}{2})$

11. Find the inverse function.

$$f(x) = \log_{10}(-8 \cdot x^3 + 9)$$

Given domain: $(-\infty, \sqrt[3]{\frac{9}{8}})$

12. Find the inverse function.

$$f(x) = \log_{10}(x^3)$$

Given domain: $(0, \infty)$

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Logarithmic Function Inverses

Find the inverse function. Use the printed domain to keep the inverse real and single-valued.

13. Find the inverse function.

$$f(x) = \log_5(8 \cdot x)$$

Given domain: $(0, \infty)$

14. Find the inverse function.

$$f(x) = -8 \cdot \log_8(4 \cdot x)$$

Given domain: $(0, \infty)$

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Logarithmic Function Inverses

Answer Key

Find the inverse function. Use the printed domain to keep the inverse real and single-valued.

1. Find the inverse function.

$$f(x) = \log_8(7 \cdot x)$$

Given domain: $(0, \infty)$

Swap x and y , then solve for y .

$$f^{-1}(x) = \frac{8^x}{7}$$

Inverse domain: all real numbers

2. Find the inverse function.

$$f(x) = 7 \cdot \log_8(8 \cdot x)$$

Given domain: $(0, \infty)$

Swap x and y , then solve for y .

$$f^{-1}(x) = \frac{8^{\frac{x}{7}}}{8}$$

Inverse domain: all real numbers

3. Find the inverse function.

$$f(x) = \log_8(6 \cdot x^2)$$

Given domain: $(0, \infty)$

Swap x and y , then solve for y .

$$f^{-1}(x) = \sqrt{\frac{8^x}{6}}$$

Inverse domain: all real numbers

4. Find the inverse function.

$$f(x) = \log_9(2 \cdot x + 5)$$

Given domain: $(-\frac{5}{2}, \infty)$

Swap x and y , then solve for y .

$$f^{-1}(x) = \frac{9^x - 5}{2}$$

Inverse domain: all real numbers

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Logarithmic Function Inverses

Answer Key

Find the inverse function. Use the printed domain to keep the inverse real and single-valued.

5. Find the inverse function.

$$f(x) = \log_4(8 \cdot x^2 + 6)$$

Given domain: $[0, \infty)$

Swap x and y , then solve for y .

$$f^{-1}(x) = \sqrt{\frac{4^x - 6}{8}}$$

Inverse domain: $[\log_4 6, \infty)$

6. Find the inverse function.

$$f(x) = \log_2(x^2)$$

Given domain: $(0, \infty)$

Swap x and y , then solve for y .

$$f^{-1}(x) = 2^{\frac{x}{2}}$$

Inverse domain: all real numbers

7. Find the inverse function.

$$f(x) = \log_6(-5 \cdot x)$$

Given domain: $(-\infty, 0)$

Swap x and y , then solve for y .

$$f^{-1}(x) = \frac{6^x}{-5}$$

Inverse domain: all real numbers

8. Find the inverse function.

$$f(x) = 6 \cdot \log_8(-8 \cdot x)$$

Given domain: $(-\infty, 0)$

Swap x and y , then solve for y .

$$f^{-1}(x) = \frac{8^{\frac{x}{6}}}{-8}$$

Inverse domain: all real numbers

9. Find the inverse function.

$$f(x) = \log_2(-6 \cdot x^3)$$

Given domain: $(-\infty, \sqrt[3]{0})$

Swap x and y , then solve for y .

$$f^{-1}(x) = \sqrt[3]{\frac{2^x}{-6}}$$

Inverse domain: all real numbers

Logarithmic Function Inverses

Answer Key

Find the inverse function. Use the printed domain to keep the inverse real and single-valued.

10. Find the inverse function.

$$f(x) = \log_2(-2 \cdot x + 3)$$

$$\text{Given domain: } (-\infty, \frac{3}{2})$$

Swap x and y, then solve for y.

$$f^{-1}(x) = \frac{2^x - 3}{-2}$$

Inverse domain: all real numbers

11. Find the inverse function.

$$f(x) = \log_{10}(-8 \cdot x^3 + 9)$$

$$\text{Given domain: } (-\infty, \sqrt[3]{\frac{9}{8}})$$

Swap x and y, then solve for y.

$$f^{-1}(x) = \sqrt[3]{\frac{10^x - 9}{-8}}$$

Inverse domain: all real numbers

12. Find the inverse function.

$$f(x) = \log_{10}(x^3)$$

$$\text{Given domain: } (0, \infty)$$

Swap x and y, then solve for y.

$$f^{-1}(x) = 10^{\frac{x}{3}}$$

Inverse domain: all real numbers

13. Find the inverse function.

$$f(x) = \log_5(8 \cdot x)$$

$$\text{Given domain: } (0, \infty)$$

Swap x and y, then solve for y.

$$f^{-1}(x) = \frac{5^x}{8}$$

Inverse domain: all real numbers

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Logarithmic Function Inverses

Answer Key

Find the inverse function. Use the printed domain to keep the inverse real and single-valued.

14. Find the inverse function.

$$f(x) = -8 \cdot \log_8(4 \cdot x)$$

Given domain: $(0, \infty)$

Swap x and y , then solve for y .

$$f^{-1}(x) = \frac{8^{\frac{x}{-8}}}{4}$$

Inverse domain: all real numbers