

Name _____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Find the inverse of the one-to-one function.

1) $f(x) = -4x + 7$

A) $f^{-1}(x) = \frac{-4x - 7}{-4}$

C) $f^{-1}(x) = \frac{x + 7}{-4}$

B) $f^{-1}(x) = \frac{x - 7}{-4}$

D) $f^{-1}(x) = \frac{y - 7}{-4}$

1) _____

2) $f(x) = \frac{8x - 5}{3}$

A) $f^{-1}(x) = \frac{3x - 5}{8}$

B) $f^{-1}(x) = \frac{3}{8x + 5}$

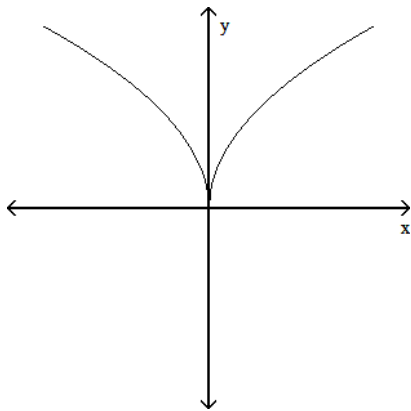
C) $f^{-1}(x) = \frac{3x + 5}{8}$

D) $f^{-1}(x) = \frac{3}{8x - 5}$

2) _____

Does the graph represent a function that has an inverse function?

3)



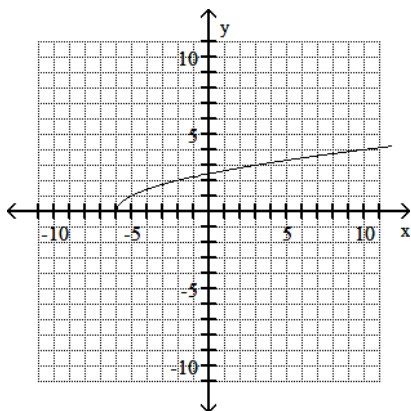
A) Yes

B) No

3) _____

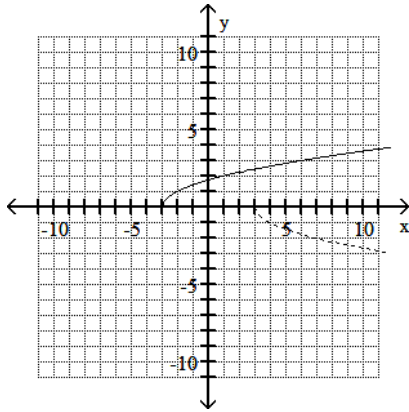
Use the graph of f to draw the graph of its inverse function.

4)

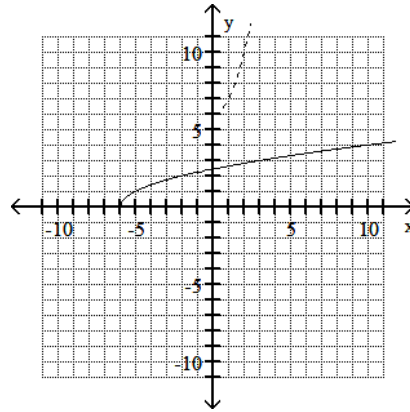


4) _____

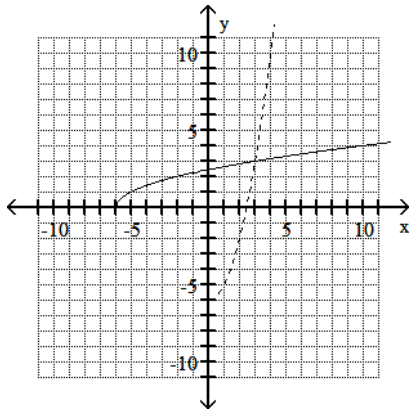
A)



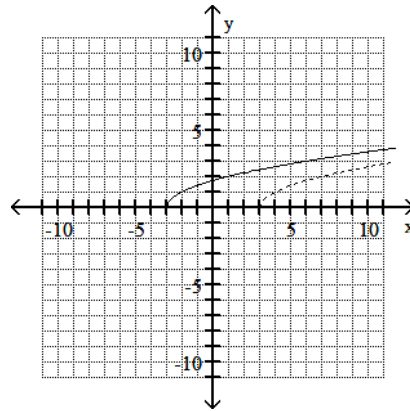
B)



C)



D)



Write the equation in its equivalent exponential form.

5) $\log_5 x = 2$

A) $x^2 = 5$

B) $5^x = 2$

C) $2^5 = x$

D) $5^2 = x$

5) _____

6) $\log_b 256 = 4$

A) $b^4 = 256$

B) $256b = 4$

C) $256^4 = b$

D) $4^b = 256$

6) _____

Write the equation in its equivalent logarithmic form.

7) $c^3 = 512$

A) $\log_3 512 = c$

B) $\log_c 3 = 512$

C) $\log_{512} c = 3$

D) $\log_c 512 = 3$

7) _____

8) $4^2 = x$

A) $\log_x 4 = 2$

B) $\log_2 x = 4$

C) $\log_4 x = 2$

D) $\log_4 2 = x$

8) _____

Evaluate the expression without using a calculator.

9) $\log_4 16$

A) 8

B) $\frac{1}{2}$

C) 1

D) 2

9) _____

10) $\log_3 \frac{1}{27}$ 10) _____
 A) -3 B) 3 C) $\frac{1}{3}$ D) 9

11) $9^{\log_9 10}$ 11) _____
 A) 10 B) 9 C) $\log_9 10$ D) 19

Evaluate or simplify the expression without using a calculator.

12) $\ln e^9$ 12) _____
 A) 1 B) e C) $\frac{1}{9}$ D) 9

Evaluate the expression without using a calculator.

13) $\ln \frac{1}{e^7}$ 13) _____
 A) $\frac{1}{7}$ B) 7 C) -7 D) $-\frac{1}{7}$

Use properties of logarithms to expand the logarithmic expression as much as possible. Where possible, evaluate logarithmic expressions without using a calculator.

14) $\log_b (yz^6)$ 14) _____
 A) $\log_b y + \log_b 6z$ B) $6 \log_b yz$
 C) $\log_b y + 6 \log_b z$ D) $6 \log_b y + 6 \log_b z$

15) $\log_5 \left(\frac{x^5}{y^7} \right)$ 15) _____
 A) $\frac{5}{7} \log_5 \left(\frac{x}{y} \right)$ B) $5 \log_5 x - 7 \log_5 y$
 C) $7 \log_5 y - 5 \log_5 x$ D) $5 \log_5 x + 7 \log_5 y$

16) $\log_2 (x + 8) - \log_2 (x - 4)$ 16) _____
 A) $\log_2 \left(\frac{x + 8}{x + 4} \right)$ B) $\log_2 12$
 C) $\log_2 \left(\frac{x + 8}{x - 4} \right)$ D) $\log_2 (x^2 + 4x - 32)$

17) $3 \log_b y + 2 \log_b z$ 17) _____
 A) $\log_b y^3 z^2$ B) $6 \log_b yz$ C) $\log_b (yz)^5$ D) $5 \log_b yz$

18) $2 \ln (x - 4) - 9 \ln x$ 18) _____
 A) $\ln \frac{(x - 4)^2}{x^9}$ B) $\ln 18x(x - 4)$ C) $\ln \frac{2(x - 4)}{9x}$ D) $\ln x^9(x - 4)^2$

Solve the equation by expressing each side as a power of the same base and then equating exponents.

19) $2^{(1+2x)} = 32$

A) {16}

B) {-2}

C) {2}

D) {4}

19) _____

20) $2^{(3x-7)} = 4$

A) {1}

B) $\{\frac{1}{2}\}$

C) {-3}

D) {3}

20) _____

Solve the exponential equation. Express the solution set in terms of natural logarithms.

21) $e^{4x} = 7$

A) $\{\frac{7}{4}e\}$

B) $\{\frac{\ln 4}{7}\}$

C) $\{\frac{\ln 7}{4}\}$

D) {4 ln 7}

21) _____

22) $2^{x+8} = 3$

A) {ln 3 - ln 2 - ln 8}

B) $\{\frac{\ln 3}{\ln 2} - 8\}$

C) $\{\frac{\ln 2}{\ln 3} + \ln 8\}$

D) $\{\frac{\ln 2}{\ln 3} + 8\}$

22) _____

Solve the logarithmic equation. Be sure to reject any value that is not in the domain of the original logarithmic expressions. Give the exact answer.

23) $\log_5(x-1) = -2$

A) $\{\frac{13}{16}\}$

B) $\{-\frac{24}{25}\}$

C) $\{-\frac{3}{4}\}$

D) $\{\frac{26}{25}\}$

23) _____

24) $\log_2(x+2) + \log_2(x-4) = 4$

A) {6}

B) {6, -4}

C) {7}

D) {-4}

24) _____

25) $\log_5(x+2) - \log_5 x = 2$

A) {5}

B) $\{\frac{1}{12}\}$

C) $\{\frac{2}{25}\}$

D) {12}

25) _____