

College Prep Algebra
Practice Quiz 4.1-4.3

Use the composition of functions to determine whether f and g are inverses of one another.

1. $f(x) = 3x - 4$; $g(x) = \frac{x-4}{3}$

- A. Yes
 B. No
 C. Maybe
 D. IDK

2. $f(x) = \frac{2}{5}x + 2$; $g(x) = \frac{5}{2}x - 5$

- A. Yes
 B. No
 C. Maybe
 D. IDK

Find the inverse of each function, then state the domain and range of $f^{-1}(x)$.

3. $f(x) = \sqrt{x+4}$

- A. $f^{-1}(x) = 4$; $R = (4, \infty)$
B. $f^{-1}(x) = 2x - 4$; $R = (-\infty, \infty)$
 C. $f^{-1}(x) = x^2 - 4$; $R = (-\infty, \infty)$
D. $f^{-1}(x) = (x - 4)^2$; $R = (-4, \infty)$

4. $f(x) = \frac{5x}{3}$

- A. $f^{-1}(x) = -\frac{3x}{5}$; $R = (-3, 5)$
B. $f^{-1}(x) = \frac{x}{5}$; $R = (-5, 3)$
C. $f^{-1}(x) = \frac{-5x}{3}$; $R = (-\infty, \infty)$
 D. $f^{-1}(x) = \frac{3x}{5}$; $R = (-\infty, \infty)$

5. $f(x) = 3x - 8$

- A. $f^{-1}(x) = \frac{x-8}{3}$; $R = (-\infty, \infty)$
B. $f^{-1}(x) = \frac{x-3}{8}$; $R = (-\infty, \infty)$
C. $f^{-1}(x) = \frac{x+3}{8}$; $R = (-\infty, \infty)$
 D. $f^{-1}(x) = \frac{x+8}{3}$; $R = (-\infty, \infty)$

Evaluate the exponential function when $x = -3$.

6. $f(x) = 2^x$

- A. -8
 B. $\frac{1}{8}$
C. $\frac{1}{6}$
D. -6

7. $f(x) = \left(\frac{4}{5}\right)^x$

- A. $\frac{125}{64}$
B. $\frac{-12}{-15}$
C. $\frac{64}{125}$
D. $-\frac{64}{125}$

Use a calculator to evaluate the exponential function for the given x value. Round to the nearest hundredth.

8. $f(x) = 3^x$; $x = 2.75$

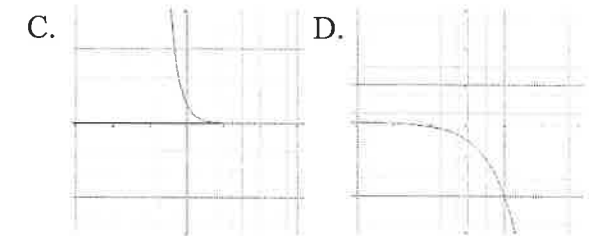
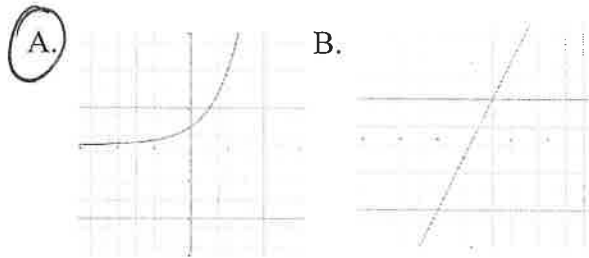
- A. 20.52
- B. 20.80
- C. 8.25
- D. 32.79

9. $f(x) = 4^x$; $x = \sqrt{15}$

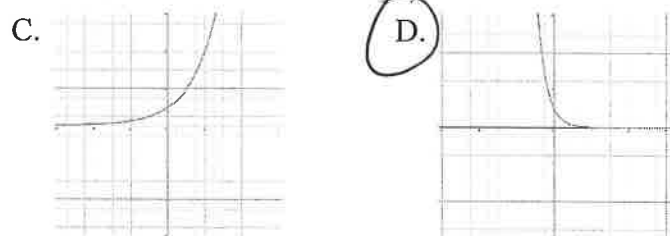
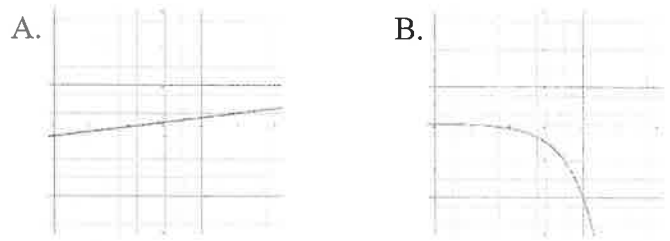
- A. 225
- B. 112.33
- C. 214.67
- D. 15.49

Sketch a graph of each function.

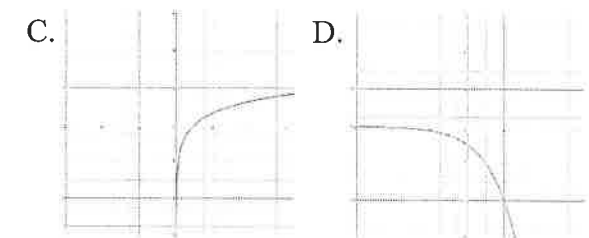
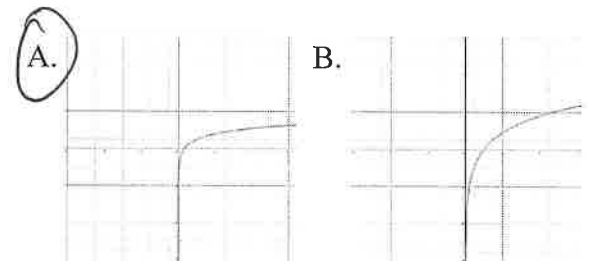
10. $f(x) = 3^x$



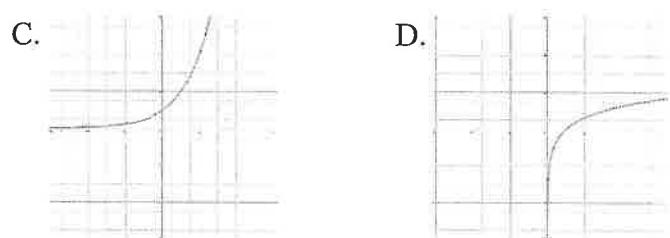
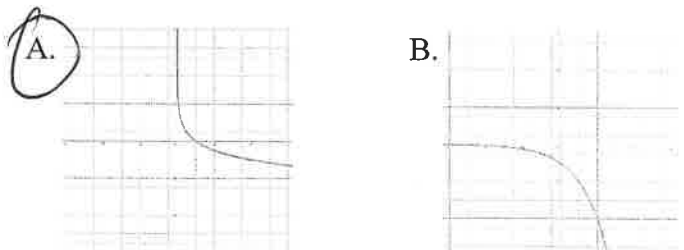
11. $f(x) = \left(\frac{1}{9}\right)^x$



12. $f(x) = \log_3 x$



13. $f(x) = \log_{\frac{1}{4}} x$



Explain how to use the graph of the first function f to produce the graph of the second function F .

14. $f(x) = 4^x$; $F(x) = 4^{x+1} - 2$

- A. Left 1, Up 2
- B. Right 1, Up 2
- C. Left 1, Down 2
- D. Right 1, Down 2

15. $f(x) = \left(\frac{1}{3}\right)^x$; $F(x) = \left(\frac{1}{3}\right)^x + 4$

- A. Up 4
- B. Down 4
- C. Right 4
- D. Left 4

16. $f(x) = \log_5 x$; $F(x) = \log_5(x - 6)$

- A. Up 6
- B. Down 6
- C. Right 6
- D. Left 6

17. $f(x) = 8^x$; $F(x) = 2(8^x)$

- A. V. Stretch 2
- B. V. Shrink 2
- C. Neither
- D. IDK

18. $f(x) = \log_3 x$; $F(x) = \log_3(x - 7) + 2$

- A. Left 7, Down 2
- B. Right 7, Down 2
- C. Left 7, Up 2
- D. Right 7, Up 2

Write each equation in its exponential form.

19. $2 = \log_3 9$

- A. $2^3 = 9$
- B. $3^2 = 9$
- C. $9^2 = 3$
- D. $9^3 = 2$

20. $\log 100 = 2$

- A. $10^2 = 100$
- B. $2^{10} = 100$
- C. $10^{100} = 2$
- D. $2^{100} = 10$

21. $\ln 8 = x$

- A. $e^x = 8$
- B. $x^e = 8$
- C. $8^e = v$
- D. $x^8 = e$

22. $\log_{\frac{1}{5}} 125 = -3$

- A. $-3^{\frac{1}{5}} = 125$
- B. $125^{\frac{1}{5}} = -3$
- C. $e^{-3} = 125$
- D. $\frac{1}{5}^{-3} = 125$

Write each equation in its logarithmic form.

23. $8^2 = 64$

A. $\log_{64} 8 = 2$

B. $\log_{64} 2 = 8$

C. $\log_2 64 = 8$

D. $\log_8 64 = 2$

24. $\left(\frac{1}{5}\right)^{-2} = 25$

A. $\log_{\frac{1}{5}} 25 = -2$

B. $\log_{\frac{1}{5}} -2 = 25$

C. $\log_{25} -2 = \frac{1}{5}$

D. $\log_{-2} \frac{1}{5} = 25$

25. $e^4 = 54.60$

A. $\log_e 4 = 54.60$

B. $\log_e 54.60 = 4$

C. $\ln 4 = 54.60$

D. $\ln 54.60 = 4$

26. $10^3 = 1000$

A. $\ln 10 = 3$

B. $\log_{1000} 10 = 3$

C. $\log_3 1000 = 10$

D. $\log 1000 = 3$

Evaluate each logarithmic expression. Do not use a calculator.

27. $\log_8 1$

A. 1

B. 0

C. 8

D. -1

28. $\log_{\frac{1}{4}} 256$

A. 5

B. -4

C. 25

D. \emptyset

29. $\log_{15} 15$

A. 1

B. 0

C. 12

D. -1

30. $2(8^{\log_8 64})$

A. 8

B. 16

C. 104

D. 128

Find the domain of the function.

31. $f(x) = \log_{13}(x - 4)$

A. $(-4, \infty)$

B. $(4, \infty)$

C. $(-\infty, 4)$

D. $(-\infty, -4)$

32. $f(x) = \log(x^2 - 3x - 10)$

A. $(-\infty, -5) \cup (-2, \infty)$

B. $(-\infty, -5) \cup (2, \infty)$

C. $(-\infty, -2) \cup (5, \infty)$

D. $[-2, 5]$

33. $f(x) = \log\left(\frac{7}{x+6}\right)$

A. $(-\infty, -6)$

B. $(-\infty, 6)$

C. $(6, \infty)$

D. $(-6, \infty)$