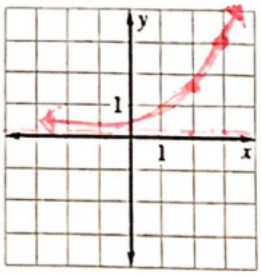
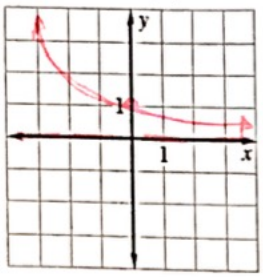
CH 4: Graph the function. State the domain and range

1. $y = 3 \cdot 2^{x-3}$



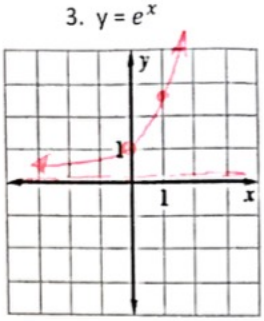
R
$y>0$

2. $y = \left(\frac{3}{4}\right)^x$



R
$y>0$

3. $y = e^x$



R
$y>0$

Simplify the expression.

4. $4e^3 \cdot e^5$ $4e^8$

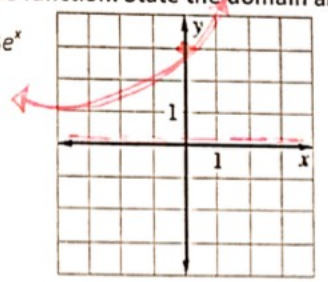
5. $(-4e^{2x})^3$ $-64e^{6x}$

6. $\frac{e^{5x}}{4e^2}$ $\frac{e^{5x-2}}{4}$

7. $\frac{9e^{6x}}{3e^{4x}}$ $3e^{2x}$

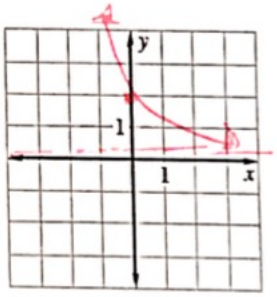
Graph the function. State the domain and range.

8. $y = 3e^x$



R
$y>0$

9. $y = 2e^{-4x}$



10. You deposit $3000 in an account that pays 5% annual interest compounded continuously. What is the balance after 2 years?

$A = \$3315.51$

Evaluate the logarithm without using a calculator.

11. $\log_2 8$ 3

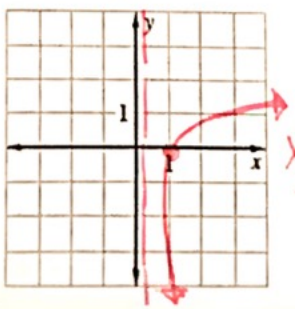
12. $\log_6 1$ 0

13. $\log_5 5$ 1

14. $\log_{1/3} 27$ -3

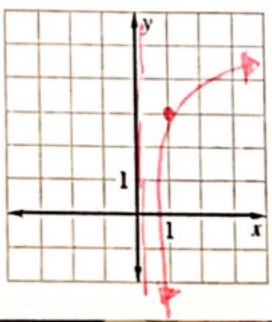
Graph the function. State the domain and range.

15. $y = \log_5 x$



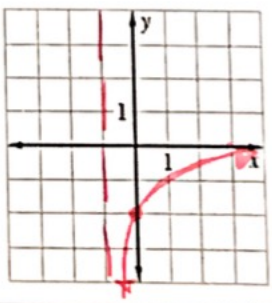
$X>0$
R

16. $y = \ln x + 3$



$X>0$
R

17. $y = \log(x+1) - 2$



$X>-1$
R

Expand the expression.

18. $\log_3 4x$

$\log_3 4 + \log_3 x$

19. $\ln 4x^2y^5$

$\ln 4 + 2\ln x + 5\ln y$

Condense the expression.

20. $\log_5 24 - \log_5 6$

$\log_5 4$

21. $\log_8 6 + 2\log_8 3$

$\log_8 54$

Use the change-of-base formula to evaluate the logarithm.

22. $\log_4 12$

1.79

23. $\log_9 18$ 1.32

Solve the equation.

24. $3^{x+1} = 27^{x+3}$

-4

25. $e^x = 5$

1.6

26. $2^{3x} + 9 = 25$

$\frac{4}{3}$

27. $4^{x+1} - 7 = 14$

1.2

28. $\log_6 (5x + 8) = \log_6(13x)$

1

29. $\ln (4x - 2) = \ln(8x)$

$-1/2$

30. $9 \ln x = 54$

403

31. $\log_3(x + 7) = 3$

20

Chapter 5: Rational Functions

The variables *x* and *y* vary inversely. Use the given values to write an equation relating *x* and *y*. Then, find *y* when *x* = –2.

32. $x = 7, y = 2$

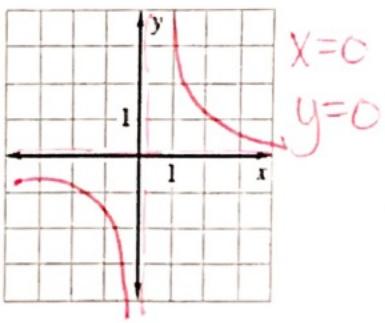
$y = \frac{14}{x}$, -7

33. $x = 3, y = -8$

$y = \frac{-24}{x}$, 12

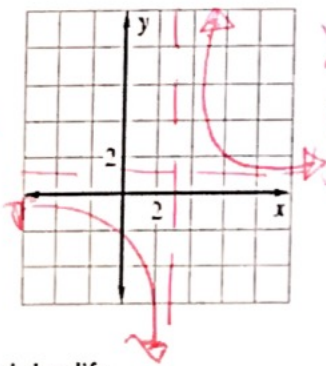
Graph the function.

34. $y = \frac{5}{4x}$



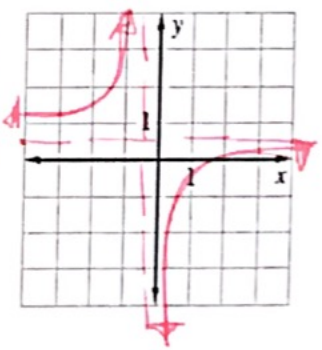
$x = 0$
$y = 0$

35. $y = \frac{5}{x-3} + 1$



$x = 3$
$y = 1$

36. $y = \frac{3x}{4x+1}$



$x = -1/4$
$y = 3/4$

Perform the indicated operation and simplify.

37. $\frac{x^2 - 2x - 15}{x^2 + x - 12} \cdot \frac{2x^2 - 6x}{x^3 + 3x^2}$

$2(x-5)/x(x+4)$

38. $\frac{x^2 - 10x + 21}{x^2 - 4} \cdot \frac{x - 2}{x - 7}$

$x-3/x+2$

39. $\frac{x^2 + 8x + 12}{x^2 - 4} \div \frac{x^2 + 10x + 24}{x^2 + x - 6}$ $= \frac{x+3}{x+4}$

Perform the indicated operation and simplify.

40. $\frac{1}{x+3}+\frac{1}{x-3}$ $\frac{2x}{(x+3)(x-3)}$

41. $\frac{4}{x-4}-\frac{3}{x+2}$ $\frac{x+20}{(x-4)(x+2)}$

42. $\frac{5x+4}{x^2-64}+\frac{3}{x-8}$ $\frac{8x+28}{(x+8)(x-8)}$

Solve the equation.

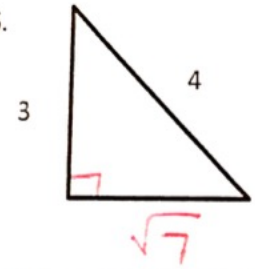
43. $\frac{x-3}{x-2}=\frac{9}{x+6}$ $x=0, 6$

44. $\frac{x-6}{x-4}-\frac{3x-2}{x-4}=4$ $x=2$

45. $\frac{3x+9}{x^2-9}=\frac{2x+7}{x-3}$ $x=-2$

CH 9: Evaluate the six trig functions of angle θ.

46.



47. Sin $\theta = \frac{6}{11}$

48. Solve *right* ΔABC, if B = 23° and a = 12.

$A=67°$ $c=13.04$

$C=90°$ $b=5.1$

49. Solve if cos θ = .23 and $90 < \theta < 180$

$\theta=76.7$ $\theta=103.3°$

50. Solve $\sin^{-1}\frac{\sqrt{2}}{2}$ $45°, \pi/4$

51. Solve ΔABC if A = 107°, B = 25° and b = 15 $C=48°$

$c=26.4$

$a=33.9$

52. a = 12, b = 27, and c = 21

$B=106.6$

$C=48.2$

$A=25.2$