

Some review problems:

1. Express the area of a circle,  $A$ , in terms of its circumference,  $C$ .

2. Simplify:  $\sqrt[3]{\frac{-16x^3}{2y^6}}$ .

3. Perform the indicated operations and simplify:  $m^{n+1}r^n - 3m^n r^{2n-1}$ .

4. Perform the indicated operations and simplify:  $\frac{ab}{\frac{1}{a} + \frac{1}{b}}$ .

5. Find  $f^{-1}(x)$  for  $f(x) = \frac{1-3x}{4}$ .

6. Evaluate  $5x+1$   $^{\frac{3}{4}}$   $- 7-x$   $^0$  for  $x=3$ .

7. Evaluate  $-2b^2$   $^{-1}$  when  $b=-2$ .

8. Find the interval where  $g(x) > 0$  if  $g(x) = -x^2 - x + 6$ .

9. If  $f(t) = \frac{2}{1-t}$ , for what value of  $t$  does  $f(t) = 3$ ?

10. Simplify completely:  $2u^3 - 3u^2 - 1 - -8u^3 - 14u + 6$ .

11. Simplify completely:  $4(2x+1)^2 + 3(2x+1) + 1$ .

12. Factor completely:  $32x^4y - 162y$ .

13. What is the remainder when  $5x^2 - 2x + 1$  is divided by  $x - 1$ ?

14. Find  $a$  so that the two lines do not intersect:  $y = 4x + 2$ ,  $y - 3 = ax$ .

15. Perform the indicated operation and simplify:  $\frac{4m^2 - v^2}{3m - 1} \div \frac{2m^2 + mv}{3m - 1}$ .

16. Perform the indicated operation and simplify:  $\frac{3c}{c-2} + \frac{c+1}{2-c}$ .

17. Simplify completely:  $\frac{\frac{a-x}{1} - \frac{a}{1}}{\frac{a}{1} - \frac{x}{1}}$

18. Solve for  $z$ :  $7z - (4z - 9) = 24 + 5(z - 1)$ .

19. Solve for  $x$ :  $\frac{a}{3} + 5x = b\left(\frac{x}{3} + 2\right)$ .

20. Solve for  $r$ :  $S = \frac{2r - a}{r - 1}$ .

21. Solve for  $R$ :  $V = \frac{3R}{a} - \frac{R}{b}$ .

22. Solve for  $t$ :  $2t^2 + 4t = 9t + 18$ .

23. Solve for  $s$ :  $-2s^2 - 4s + 2s^3 = 0$ .

24. Solve for  $m$ :  $m^3 + 3m^2 - 4m - 12 = 0$ .

25. Solve for  $p$ :  $\frac{4}{p} - \frac{2}{p+1} = 3$ .

26. To get a B in a course a student must have an average of at least 80% on five tests that are worth 100 points each. On the first four tests a student scores 92%, 83%, 61%, and 71%. Determine the lowest score the student can receive on the fifth test to assure a grade of B for the course.

27. The area of a rectangle is 84 square feet and the length is 6 feet longer than the width. If  $w$  represents the width, write an equation that could be used to find the dimensions of the rectangle.

28. A furniture store drops the price of a table 37 percent to a sale price of \$364.77. What is the original price?

29. The cost of mailing envelopes by bulk mail is \$35 for the first 200 plus \$0.12 for each additional envelope over 200. Write a function to represent the cost of mailing  $x$  envelopes when  $x \geq 200$ .

30. Solve for  $t$ :  $(t+2)^2 = 8$ .

31. Solve for  $y$ :  $-15y + 6y^2 = -y$ .

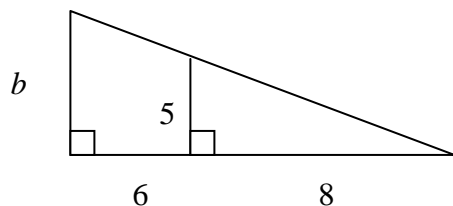
32. Solve for  $z$ :  $z^2 - 4z + 6 = 0$ .

33. If a solution to  $f(x) = 0$  is  $x = 5$ , find a solution to  $3f(x+2) = 0$ .

34. Solve for  $x$ :  $\sqrt{x+6} = x$

35. Solve for  $r$ :  $5 - 3r \leq 8$ .

36. Find the length of  $b$ :



37. Find the area of the triangle bounded by  $y = 5 - 2x$ , the  $x$ -axis, and the  $y$ -axis in the first quadrant.

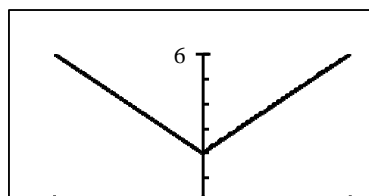
38. Solve for  $x$ :  $|2x+1| \geq 7$ .

39. Find the domain of  $y = \sqrt{4-5x}$ .

40. Graph  $y = \frac{6}{x}$ .

41. Find the intercepts of  $y - 2x^2 - 13x = 6$ .

42. Find the equation of the graph at the right:



43. Find the distance between (6,3) and (-2,4).

44. Find the midpoint of the line segment joining (6,9) and (-3,1).

45. What is the range of  $y = 2(3)^x$  ?

46. Find the equation of the line perpendicular to  $3y + 2x - 3 = 0$  passing through (4,-1).

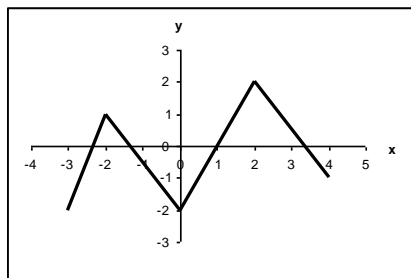
47. Find  $f(-4)$  if  $f(x) = \frac{2x^2 - 11}{3x}$ .

48. Find  $f(b+2)$  if  $f(x) = 5 - 3(x+1)$ .

49. Find the domain of  $g(x) = \frac{1}{x^2 - x - 12}$ .

50. Find  $h(3)$  if  $h(t) = \begin{cases} 2t^2 - 5 & t < -1 \\ 4 - 3t & t \geq -1 \end{cases}$ .

51. Find the domain and the range of the function graphed at the right:

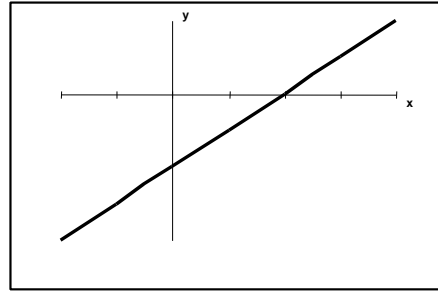


52. If (5,6) is a point on the graph of  $y = g(x)$ , find a point on the graph of  $y = -g(x) + 1$ .

53. Find  $g(f(-2))$  if  $f(x) = \log_4(-8x)$  and  $g(x) = x - 3$ .

54. If  $h(t) = \frac{t}{t+1}$ , find the value of  $t$  so that  $h(t) = 3$ .

55. If the graph of  $y = f(x)$  is at the right, sketch the graph of  $y = |f(x)|$ .



56. Sketch the graph of  $y = \log_3(x+2)$ .

57. Rewrite  $5^b = a$  in logarithmic form.

58. Rewrite as a single logarithm:  $\frac{1}{2} \log x + 4 \log y - 2 \log z$ .

59. Solve for  $t$ :  $3^{2t} = 27^{2t-1}$ .

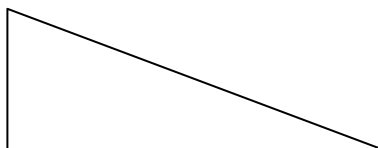
60. Solve for  $r$ :  $3 + 6e^{2r} = 5$ .

61. Solve for  $y$ :  $\log_3 y - \log_3(y-1) = 2$ .

62. Solve the system of equations:  $\begin{cases} 4x + 3y = 0 \\ 8x = 9y + 2 \end{cases}$ .

63. If  $f(x) = -x^2$  and  $g(x) = x + 4$ , find the values of  $x$  so that  $g(f(x)) > 0$ .

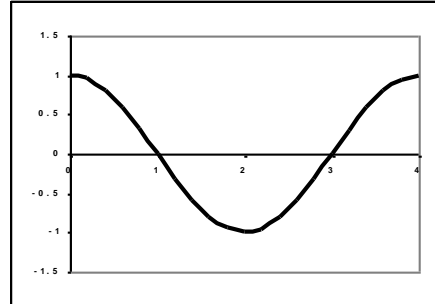
64. Express the length of side  $a$  in terms of  $m$ :



$a$  $m$ 

65. If  $\tan \theta = B$  where  $\theta$  is an angle in quadrant I, express  $\sin \theta$  in terms of  $B$ .

66. Find the trigonometric equation for this graph:



67.  $\sin(\theta + \pi) =$

68. Find  $\cos\left(\frac{4\pi}{3}\right)$ .