

**The following problems cover the skills that are necessary to be successful on Test A.**

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

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

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

4. Rationalize the denominator:  $\frac{2}{\sqrt{2} + b}$ .

5. Evaluate  $(5x+1)^{3/4} - (7-x)^0$  for  $x = 3$ .

6. Evaluate  $-(2b^2)^{-1}$  when  $b = -2$ .

7. Simplify completely:  $2\sqrt{50} - 7\sqrt{18} + \sqrt{8}$ .

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

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

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

11. Perform the indicated operation and simplify completely:

$$\frac{z^2 + z - 12}{2z^2 + 6z} * \frac{z^2 + 3z}{6z + 24}$$

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

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

14. Solve for x:

$$\frac{a}{3} + 5x = b\left(\frac{x}{3} + 2\right)$$

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

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

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

18. 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.

19. 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.

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

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

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

23. Perform the indicated operation and simplify:  $\sqrt{-2} \cdot \sqrt{-24}$ .

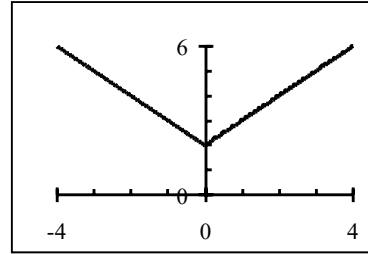
24. Solve for  $r$ :  $5 - 3r \leq 8$ .

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

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

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

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



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

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

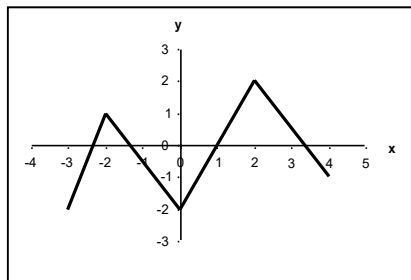
31. Find the slope and  $y$ -intercept of the line  $5x + 4y = 8$ .

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

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

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

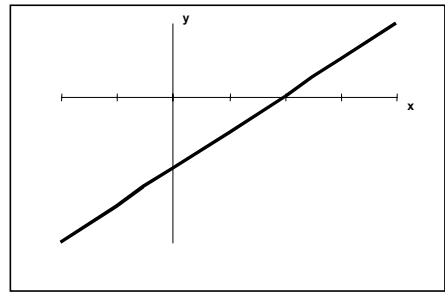
35. Find the domain and the range of the function graphed at the right:



36. If  $(5,6)$  is a point on the graph of  $y = g(x)$ , find a point on the inverse graph,  $g^{-1}(x)$

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

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



39. Rewrite  $10^b = a$  in logarithmic form.

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

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



42. Solve the system of equations:

$$\begin{cases} 4x + 3y = 0 \\ 8x = 9y + 2 \end{cases}$$

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

