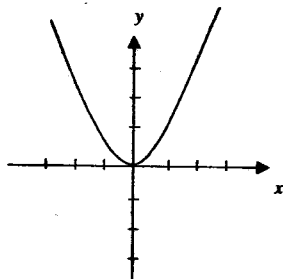


- Evaluate  $n^2p - 2np$  for  $n = 3$  and  $p = 4$ .  
A. 132 B. 12 C. 30 D. 60 E. None of the above.
- $(\frac{2}{5} + \frac{1}{4}) \div \frac{1}{5} =$   
A.  $\frac{5}{3}$  B.  $\frac{3}{4}$  C.  $\frac{1}{15}$  D.  $\frac{13}{4}$  E.  $\frac{13}{100}$
- $-\frac{3}{4} - \frac{2}{5} =$   
A.  $\frac{23}{20}$  B.  $-\frac{5}{9}$  C.  $-\frac{7}{20}$  D.  $\frac{1}{9}$  E. None of the above.
- Simplify by combining like terms:  $5x - [4 - 3(2x - 8)]$ .  
A.  $11x - 28$  B.  $-x - 12$  C.  $-x + 19$  D.  $11x + 21$  E. None of the above.
- Simplify, giving your answer in scientific notation:  $(3.0 \times 10^{-4})(7.2 \times 10^9)$ .  
A.  $2.16 \times 10^5$  B.  $21.6 \times 10^{-5}$  C.  $2.16 \times 10^{-36}$  D.  $2.16 \times 10^6$  E. None of the above.
- $(\frac{1}{2}x - 5)^2 =$   
A.  $\frac{1}{4}x^2 + 5x - 25$  B.  $\frac{1}{4}x^2 - 5x + 25$  C.  $\frac{1}{4}x^2 - \frac{5}{2}x - 25$  D.  $\frac{1}{4}x^2 - \frac{5}{2}x + 25$   
E. None of the above.

- The slope of a line passing through the two points  $(1, 3)$  and  $(3, -2)$  is  
A.  $\frac{1}{4}$  B.  $\frac{1}{2}$  C.  $-\frac{2}{5}$  D.  $-2$  E. None of the above.
- Find the correct equation for the following graph.



- $y = 2x^2 - 1$  B.  $y = x$  C.  $y = x^2 - 1$  D.  $y = x^2$  E. None of the above.
- If  $f(x) = \frac{2x + 1}{3x - 4}$ , find  $f(x + 1)$ .  
A.  $\frac{2x + 3}{3x - 1}$  B.  $\frac{2x + 2}{3x - 3}$  C.  $\frac{2x + 1}{3x + 1}$  D.  $\frac{2x^2 + 1}{3x^2 + 1}$  E. None of the above.
  - Find the equation of the line, in standard form, having  $x$ -intercept 3 and  $y$ -intercept  $-2$ .  
A.  $2x + 3y = 6$  B.  $3x - 2y = 5$  C.  $2x - 3y = 6$  D.  $2x + 3y = 3$  E. None of the above.
  - Find a function for the line containing the points  $(4, -1)$  and  $(2, -2)$ .  
A.  $f(x) = x - 3$  B.  $f(x) = \frac{1}{2}x + 3$  C.  $f(x) = 2x - 3$  D.  $f(x) = \frac{1}{2}x$  E. None of the above.

12. If  $F(x) = 3 - x$  and  $G(x) = 2 + x^2$ , find  $(F \cdot G)(-2)$ .  
 A. 6 B. 30 C. -30 D. -6 E. None of the above.
13. Solve the inequality  $3x - 7 > 5x + 6$ .  
 A.  $x < -\frac{13}{2}$  B.  $x > -\frac{13}{2}$  C.  $x < -\frac{1}{2}$  D.  $x > -\frac{1}{2}$  E. None of the above.
14. Avis charges \$25 per day plus 30 cents per mile to rent a car. National only charges 40 cents per mile. If Joe rents a car for one day, for what number of miles,  $x$ , will National be the least expensive?  
 A.  $x < 25$  B.  $x > 25$  C.  $x < 250$  D.  $x < \frac{55}{40}$  E. None of the above.
15. Solve:  $|2x + 1| = 5$ .  
 A.  $x = -2, x = 2$  B.  $x = -2, x = 3$  C.  $x = 2$  D.  $x = -3, x = 2$  E. None of the above.
16. Solve:  $|3x - 7| \geq 5$ .  
 A.  $[\frac{2}{3}, \infty)$  B.  $(-\infty, \frac{2}{3}] \cup [4, \infty)$  C.  $(-\infty, -4] \cup [\frac{2}{3}, \infty)$  D.  $(-\infty, -4] \cup [4, \infty)$   
 E. None of the above.
17. If  $y$  varies inversely as  $x$  and  $y = 18$  when  $x = 6$ , find  $x$  when  $y = 2$ .  
 A. 54 B.  $\frac{1}{54}$  C.  $\frac{2}{3}$  D.  $\frac{3}{2}$  E. None of the above.
18. Simplify  $\left(\frac{a^2b^{-3}}{a^{-3}b^2}\right)^{-2}$ .  
 A.  $\frac{b}{a}$  B.  $(\frac{a}{b})^2$  C.  $(\frac{a}{b})^6$  D.  $(\frac{b}{a})^{10}$  E. None of the above.
19. Factor completely:  $-8y^3 + 20y^2 + 12y$ .  
 A.  $-4y(2y-3)(y+1)$  B.  $-4y(2y+1)(y-3)$  C.  $-4y(2y-1)(y+3)$  D.  $-4y(2y+3)(y+1)$   
 E. None of the above.
20. Factor completely:  $90ax^2 - 10ay^2$ .  
 A.  $10a(9x^2 - y^2)$  B.  $10(ax + y)(ax - y)$  C.  $10(9x + y)(9x - y)$  D.  $10a(x - y)^2$   
 E. None of the above.
21. Divide and simplify  $\frac{x^2 - 2x + 1}{x^2 - 1} \div \frac{x^2 - 3x + 2}{x - 2}$ .  
 A.  $\frac{(x-1)^2}{x+1}$  B.  $\frac{1}{x+1}$  C.  $\frac{x-2}{(x+1)(x+2)}$  D. 1 E. None of the above.
22. Add and simplify  $\frac{3ab}{a^2 - b^2} + \frac{a-b}{a+b}$ .  
 A.  $\frac{a^2 + ab + b^2}{a^2 - b^2}$  B.  $\frac{a^2 + 3ab - b^2}{a^2 - b^2}$  C.  $\frac{a + 3ab - b}{a^2 - b^2}$  D.  $\frac{a^2 - ab - b^2}{a^2 - b^2}$  E. None of the above.
23. Combine terms and simplify:  $12\sqrt{45} - 8\sqrt{80}$ .  
 A.  $-20\sqrt{5}$  B.  $-4\sqrt{35}$  C.  $4\sqrt{5}$  D.  $8\sqrt{5}$  E. None of the above.
24. Simplify:  $\sqrt{(x-16)^{12}}$ .  
 A.  $(x-16)^{2\sqrt{3}}$  B.  $x - \frac{3}{4}$  C.  $(x-16)^6$  D.  $(x+16)^6$  E. None of the above.

25. Multiply and simplify, writing your answer in radical notation:  $\sqrt{10}\sqrt{6}$ .  
 A.  $\sqrt{16}$  B.  $6\sqrt{10}$  C.  $10\sqrt{6}$  D.  $2\sqrt{15}$  E. None of the above.
26. Solve for  $x$ :  $\sqrt{3x+7} = 8$ .  
 A.  $x = \frac{1}{3}$  B.  $x = 5$  C.  $x = \sqrt{3}$  D.  $x = 57$  E. None of the above.
27. Solve  $A = \frac{1}{2}h(a+b)$  for  $h$ .  
 A.  $h = \frac{a+b}{2A}$  B.  $h = \frac{A}{2(a+b)}$  C.  $h = \frac{2A}{a+b}$  D.  $h = \frac{2(a+b)}{A}$  E. None of the above.
28. Solve the system of equations for  $x$ :  $3x + y = -1$ ,  $x + 2y = 3$ .  
 A.  $x = -2$  B.  $x = 2$  C.  $x = 1$  D.  $x = -1$  E. None of the above.
29. Solve for  $x$ :  $6x^2 = 42$ .  
 A.  $x = 7$  B.  $x = \pm\sqrt{7}$  C.  $x = -7$  D.  $x = 14$  E. None of the above.
30. Solve for  $x$ :  $2x^2 - 3x = 2$ .  
 A.  $-\frac{1}{2}, -2$  B.  $-\frac{3}{2}, 2$  C.  $\frac{3}{2}, 2$  D.  $\frac{1}{2}, -2$  E. None of the above.
31. Solve for  $x$ :  $\frac{1}{x-4} - \frac{1}{x-2} = \frac{1}{4}$ .  
 A.  $x = 4, x = 2$  B.  $x = 0, x = 2$  C.  $x = 0, x = 6$  D.  $x = 6, x = 4$  E. None of the above.
32. Rationalize the denominator:  $\frac{\sqrt{10}}{\sqrt{3x}}$ .  
 A. 10 B.  $\frac{\sqrt{30x}}{9x^2}$  C.  $\frac{\sqrt{30x}}{3x}$  D.  $\frac{10}{3x}$  E.  $\frac{\sqrt{10+3x}}{9x^2}$
33. One solution of  $2x^2 + 2x - 1 = 0$  is:  
 A.  $-1 - \sqrt{3}$  B.  $-2 - \frac{1}{2}\sqrt{3}$  C.  $-2 - \sqrt{3}$  D.  $\frac{1}{2} - \frac{1}{2}\sqrt{3}$  E.  $-\frac{1}{2} - \frac{1}{2}\sqrt{3}$
34.  $(\frac{1}{8})^{-2/3} =$   
 A.  $\frac{1}{4}$  B. 4 C.  $16\sqrt{2}$  D.  $\frac{1}{16\sqrt{2}}$  E. None of the above.
35. The sum of two positive numbers is  $\frac{3}{2}$  and their difference is  $\frac{1}{2}$ . Find the smaller of the two numbers.  
 A.  $\frac{1}{2}$  B.  $\frac{3}{2}$  C. 1 D.  $\frac{1}{4}$  E. None of the above.
36. Paul can paint a room in 5 hours. Sally can paint the same room in 3 hours. How long will it take for them to paint the room if they work together?  
 A. 4 hours B.  $1\frac{7}{8}$  hours C. 3 hours D.  $\frac{8}{15}$  hours E. None of the above.
37. At 2:00 P.M. two cars start toward each other from towns 240 miles apart. If the rate of one car is 10 mph faster than the other, find the rate of the faster car if the two cars meet at 5:00 P.M.  
 A. 45 mph B. 35 mph C. 40 mph D. 30 mph E. None of the above.

38. Two investments are made totaling \$4800. Part of the money is invested at 8% and the rest at 9%. In the first year, they yield \$412 in simple interest. How much money is invested at 8%?  
A. \$1820 B. \$2980 C. \$2600 D. \$2000 E. None of the above.

### SOLUTIONS

1. B 2. D 3. E  $(-\frac{23}{20})$  4. A 5. D 6. B 7. E  $(-\frac{5}{2})$  8. D 9. A 10. C  
11. E  $(y = \frac{1}{2}x - 3)$  12. B; 13. A 14. C 15. D 16. B 17. A 18. D 19. B  
20. E  $[10a(3x + y)(3x - y)]$  21. B 22. A 23. C 24. C 25. D 26. E  $(x = 19)$   
27. C 28. D 29. B 30. E  $(x = -\frac{1}{2}, x = 2)$  31. C 32. C 33. E 34. B 35. A  
36. B 37. A 39. D;