

Please do all your work on a separate piece of paper. Please show all setup and work!

Solve the equation.

1. $8(x + 2) - 3(2x + 1) = 2(x + 5)$

2. $\frac{6}{x} - \frac{2}{x+3} = \frac{3(x+5)}{x^2+3x}$

Solve the equation for x.

3. $19x + \frac{1}{2}ax = x + 9$

Write an algebraic expression for the verbal description and simplify.

4. The area of a triangle with base 20 inches and height h inches.

5. One positive number is one-fifth of another number. The difference between the two numbers is 76. Find the numbers.

Solve the percent problem.

6. 459 is what percent of 340?

Word problems

7. Two families meet at a park for a picnic. At the end of the day one family travels east at an average speed of 42 miles per hour and the other travels west at an average speed of 50 miles per hour. Both families have approximately 160 miles to travel. a) Find the time it takes each family to get home. b) Find the time that will have elapsed when they are 100 miles apart. c) Find the distance the eastbound family has to travel after the westbound family has arrived home.

8. An automobile dealer has \$600,000 of inventory in compact cars and midsize cars. The profit of a compact car is 24% and the profit on a midsize car is 28%. The profit for the entire stock is 25%. How much was invested in each type of car?

Solve the quadratic equation for x by factoring.

9. $\frac{1}{8}x^2 - x - 16 = 0$

Solve by taking the square roots.

10. $(x + 2)^2 = 14$

Solve by completing the square.

11. $x^2 - 2x - 3 = 0$

Perform the operation and write the result in standard form.

12. $(3 + \sqrt{-5})(7 - \sqrt{-10})$

13. $(2 - 3i)^2$

14. $\frac{6-5i}{i}$

15. $\frac{5}{1-i}$

Use the quadratic formula to solve the quadratic equation.

16. $x^2 + 6x + 10 = 0$

Express as i , $-i$, 1 , or -1

17. i^{50}

Find all the solutions of the equation.

18. $x^3 - 3x^2 - x + 3 = 0$

19. $x^4 + 5x^2 - 36 = 0$

20. $6x - 7\sqrt{x} - 3 = 0$

21. $4\sqrt{x} - 3 = 0$

22. $\sqrt[3]{3x+1} - 5 = 0$

23. $\sqrt{x} - \sqrt{x-5} = 1$

24. $(x+3)^{\frac{3}{2}} = 8$

25. $\frac{1}{x} - \frac{1}{x+1} = 3$

26. $4x + 1 = \frac{3}{x}$