

All answers must be exact and simplified. They may contain simplified radicals, reduced fractions, or terminating decimals, but they may NOT contain decimal approximations.

1. Decide whether the points are vertices of a right triangle:

$(5, -7)$, $(11, -5)$, and $(15, -17)$

1. _____

2. Simplify: $8\sqrt{108xy^3} + 2\sqrt{675xy^3}$

2. _____

3. To hang a math poster in her classroom, Mrs. Smith leaned a 10-foot ladder against the wall, placing the bottom of the ladder on the floor 3 feet away from the wall. How high up on the wall was the ladder?

3. _____

4. Solve for b : $A = \frac{(a+b)h}{2}$.

4. _____

5. Write the equation of a line in slope-intercept form that passes through $(6, -3)$ and is perpendicular to $2x - 3y = 5$.

5. _____

6. The math club budgeted \$200 for their pancake breakfast. Each meal costs \$1.60 to prepare. Write an inequality that represents the number of meals x that can be prepared without going over the budget.

6. _____

7. Solve the inequality: $-2(x+3) - 1 > -8$

7. _____

8. Solve the system of equations:
$$\begin{cases} x - 2y = 4 \\ 2x + 4y = 20 \end{cases}$$

8. _____

9. Complete the square: $3x^2 - 5x + \underline{\hspace{2cm}}$

9. _____

10. Factor completely: $3x^6 - 243x^2$

10. _____

11. Find the discriminant: $4x + 2 = 3x^2$

11. _____

12. Find the vertex: $f(x) = 4x^2 + 8x + 1$

12. _____

13. Find the x -intercept: $3y - 10x = 4$

13. _____

14. Write an equation in slope-intercept form of the line that passes through the points $(-5, 3)$ and $(4, -5)$.

14. _____

15. A bookstore sold 8,127 paperbacks one month. This was 10% less than the number of paperbacks the store sold the previous month. How many paperbacks did the store sell in both the months combined?

15. _____

16. Which property would be used first to simplify the expression $3(2x - y + 5) - 7(-10x + 4y - 1)$?

16. _____