

Algebra and Geometry 1. Homework 18.



1. The length of the hypotenuse is 10 cm, the length of one of the legs is 4 cm. What is the length of another leg?
2. The diagonal of a rectangle is 10 cm long. One side is 5 cm. What is the length of another side?
3. Factorize polynomials (hint: remember that $(\sqrt{a})^2 = a$):
a. $4x^2 + 4\sqrt{5}x + 5$; b. $x^2 - 3$;
4. There are two cups, one with coffee and another one with milk (the amounts of coffee and milk are the same). One teaspoon of coffee is poured into milk and mixed. Then one teaspoon of mixture is poured into coffee. Is there now more coffee in the milk, or milk in the coffee?
5. Find possible values for variables in the following expressions:

Examples;

$$\frac{23 - y}{5 + y}, \quad 5 + y \neq 0, \quad y \neq -5$$

$$\sqrt{a}, \quad a \geq 0$$

$$\sqrt{b + 3}, \quad b + 3 \geq 0, \quad b \geq -3$$

$$a. \frac{x - 7}{2x + 8} \quad b. \frac{2a - 3}{a^2}, \quad c. \frac{x^2}{x^2 + 3}, \quad d. \sqrt{y - 3}, \quad e. \sqrt{b}$$

6. Simplify fractions, find the values of fractions with given values of variables.

$$a. \frac{x^2 - xy + y^2 - (x - y)^2}{x + y}; \quad x = 0.3, \quad y = 0.5$$

$$b. \frac{m - 4}{(m + n)^2 - (m - n)^2}; \quad m = \frac{2}{3}, \quad n = -\frac{3}{4}$$

$$c. \frac{(a + b)^2 - 4ab}{a + b}; \quad a = 0.74, \quad b = -0.26$$

7. Add fractions:

$$a. \frac{1}{x} + \frac{1}{y} + \frac{1}{xy}; \quad b. \frac{1}{b^3} - \frac{2}{b^2} + \frac{1}{b};$$

8. There are 30 rows in the theater. Each row has 20 seats. Only 72 people bought tickets to see the new movie. How many different ways are there for them to sit?
9. On the lawn grew 35 yellow and white dandelions. After eight whites flew away, and two yellows turned white, there were twice as many yellow dandelions as white ones. How many whites and how many yellow dandelions grew on the lawn at the beginning?