

**Math 5b, homework 14.**



1. Without using calculator compare:

$3 \dots \sqrt{11}$

$11 \dots \sqrt{110}$

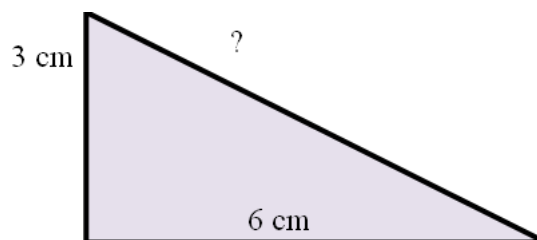
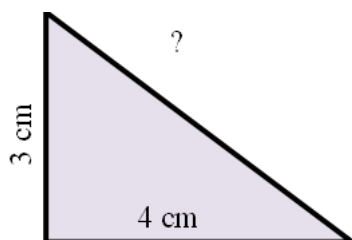
$22 \dots \sqrt{484}$

$5 \dots \sqrt{20}$

$17 \dots \sqrt{299}$

$35 \dots \sqrt{1215}$

2. For the right triangles below find the missing side:



3. Evaluate:

$$(\sqrt{7} - 2)^2 + 4\sqrt{7}$$

4. Evaluate:

Example:

$$\frac{(-5)^2 \cdot (-5^{-6})^2}{5^{-9}} = \frac{(-5)^2 \cdot (-5)^{-12}}{\frac{1}{5^9}} = \frac{(-5)^{2-12}}{\frac{1}{5^9}} = \frac{(-5)^{-10}}{\frac{1}{5^9}} = \frac{1}{(-5)^{10}} \cdot \frac{5^9}{1} = \frac{5^9}{5^{10}} = \frac{1}{5} = 5^{-1}$$

a.  $\frac{(3^{-2})^{-3} \cdot 27}{-3^7};$

b.  $\frac{2^4 \cdot (2^2)^{-3}}{2^{-5}};$

c.  $\frac{(-7)^2 \cdot (-7^{-3})^3}{7^{-7}};$

5. Solve the following equations:

a.  $2(x - 1) = \frac{2}{3}(x + 5);$

b.  $2x - (5x - 7) = -1$

c.  $\frac{x - 2}{x - 1} = 3$

6. Poline drank one third of a glass of coffee, after which she topped up the glass with milk to its original volume. Then she drank half a glass of the resulting coffee with milk, and again filled the glass by adding milk. Next, Poline drank one sixth of the glass and once more filled it by adding milk. Finally, she drank the entire remaining drink, finishing the whole glass. What volume of coffee and what volume of milk did Poline drink in total?
7. The sum of three numbers is 125. The first number is  $2\frac{1}{2}$  times smaller than the second, and the third is equal to  $\frac{2}{3}$  of the first number. Find each of the three numbers.
8. The sum of four numbers is 97.5. Find these numbers if they are in the ratio 3 : 6 : 2 : 4.