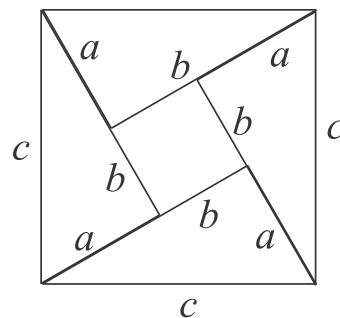


- The hypotenuse of the right triangle is 10 cm. One leg is 5 cm. What is the length of the other leg?
- Prove the Pythagorean theorem using the picture.
- Peter can clean up the apartment 15 minutes faster, than Robert can do it. Together, they can do the job on 1.5 hours. How many hours does Peter need to clean up the apartment? (hint: write an equation,  $x$  is the time Peter needs to do the cleanup).



- Solve the inequalities:

- $3x + 4 > 10$
- $-3x + 4 > 10$
- $|3x + 2| > 4$
- $|-3x + 2| > 4$

- Evaluate:

- $5^{-1} + 10^{-1}$ ;
- $(0.5 + 1)^{-2}$ ;
- $(2^{-4} + 4^{-2})^{-1}$ ;
- $(2 - 2^{-1})^{-1}$ ;
- $3^{-1} + 9^{-1}$ ;
- $(0.2 + 1)^{-1}$ ;
- $(4^{-2} - 4^{-3})^{-1}$ ;
- $(3 - 3^{-1})^{-2}$ ;

- Prove that the following equalities are true:

$$a. (a^{-1} - b^{-1})^2 = a^{-2} - 2a^{-1}b^{-1} + b^{-2}$$

$$b. (a^{-1} - b^{-1})(a^{-1} + b^{-1}) = a^{-2} - b^{-2}$$

- Simplify:

Example:

$$\begin{aligned} \frac{\frac{1}{a^2} + \frac{2}{ab} + \frac{1}{b^2}}{\frac{1}{a^2} - \frac{1}{b^2}} &= \frac{\frac{b^2}{a^2b^2} + \frac{2ab}{a^2b^2} + \frac{a^2}{a^2b^2}}{\frac{b^2}{a^2b^2} - \frac{a^2}{a^2b^2}} = \frac{\frac{b^2 + 2ab + a^2}{a^2b^2}}{\frac{b^2 - a^2}{a^2b^2}} = \frac{b^2 + 2ab + a^2}{a^2b^2} \cdot \frac{a^2b^2}{b^2 - a^2} \\ &= \frac{(b + a)^2}{a^2b^2} \cdot \frac{a^2b^2}{(b + a)(b - a)} = \frac{(b + a)(b + a)}{a^2b^2} \cdot \frac{a^2b^2}{(b + a)(b - a)} = \frac{b + a}{b - a} \end{aligned}$$

$$\frac{a^{-2} + 2a^{-1}b^{-1} + b^{-2}}{a^{-2} - b^{-2}}$$