

Math 4a. Homework 10.

Problems marked with * are more difficult.



1. Compare, if possible:

$$|7 + 3| \quad |7| + |3|$$

$$|7 - 3| \quad |7| - |3|$$

$$|7 - 3| \quad |3 - 7|$$

$$|3 - 7| \quad |3| - |7|$$

$$|a - b| \quad |b - a|$$

$$|7 - 3| \quad |7| + |3|$$

$$|3a| \quad 3 \cdot |a|$$

$$|a + b| \quad |a| + |b|$$

$$|b \cdot a| \quad b \cdot |a|$$

2. Solve the following equations:

$$a. |x + 3| = 5$$

$$b. |x - 3| = 5$$

$$c. |x - 3| = -5$$

3. Compute:

$$1) \frac{1}{2} \cdot \frac{2}{3} \cdot \frac{3}{4} \cdot \frac{4}{5};$$

$$4) 1 \frac{1}{2} \cdot 1 \frac{1}{3} \cdot 1 \frac{1}{4} \cdot 1 \frac{1}{5};$$

$$2) \frac{6}{7} \cdot \frac{7}{8} \cdot \frac{8}{9} \cdot \frac{9}{10} \cdot \frac{10}{11};$$

$$5) \left(1 + \frac{1}{4}\right) \cdot \left(1 + \frac{1}{5}\right) \cdot \left(1 + \frac{1}{6}\right) \cdot \left(1 + \frac{1}{7}\right) \cdot \left(1 + \frac{1}{8}\right);$$

$$3) \frac{1}{2} \cdot \frac{2}{3} \cdot \dots \cdot \frac{23}{24} \cdot \frac{24}{25};$$

$$6) \left(1 - \frac{1}{2}\right) \cdot \left(1 - \frac{1}{3}\right) \cdot \left(1 - \frac{1}{4}\right) \cdot \dots \cdot \left(1 - \frac{1}{99}\right) \cdot \left(1 - \frac{1}{100}\right).$$

4. Compute:

$$a. 128 - 264,$$

$$b. 345 - 283,$$

$$c. -457 + 123,$$

$$d. -85 - (-34),$$

- 5.
- e. Jane and Mary are planting flowers. Jane can plant all flowers in 2 hours, Mary can do it in 3 hours. How many hours they need to plant all flowers together?
 - f. Jane and Mary are doing fall clean up in a backyard. Mary can do the job in 6 hours; together they can do it in 4 hours. How many hours does Jane need to clean up the backyard?
6. There are three dungeon cells in a castle. A Princess is imprisoned in one cell, there is a dragon in the other and the third cell is empty. Each cell is labeled, but all labels are wrong. The label on the first cell says "there is the Princess here", the label on the second cell says "The third cell is empty" and the label in the third cell says "There is a dragon here". Which cell the brave Prince should open to save the Princess if he can only open one door?
7. Draw a number lines and mark the points with the following coordinates on it. For each exercise choose the best scale. Use a ruler!
- a. $A\left(\frac{1}{5}\right), B\left(\frac{3}{5}\right), C\left(-\frac{2}{5}\right), D\left(1\frac{2}{5}\right), E\left(-1\frac{1}{5}\right), F\left(\frac{1}{2}\right), G\left(-\frac{1}{2}\right)$;
 - b. $A(50), B(-75), C(150), D(200), E(-300), F(250)$;
 - c. $A(12), B(-3), C(10), D(-5), E(7), F(-10)$;
8. Compute using the distributive property:

Example:

$$34 \cdot 12 + 15 \cdot 34 - 27 \cdot 24 = 34 \cdot (12 + 15) - 27 \cdot 24 = 34 \cdot 27 - 27 \cdot 24 = 27 \cdot (34 - 24) = 27 \cdot 10 = 270$$

- a) $62 \cdot 14 + 11 \cdot 62 - 12 \cdot 25 =$
- b) $48 \cdot 11 - 11 \cdot 16 + 32 \cdot 19 =$
- c) $17 \cdot 19 + 17 \cdot 45 - 17 \cdot 14 =$
- d) $12 \cdot 32 - 12 \cdot 18 + 38 \cdot 14 =$

9. How should be tied a goat to be able to graze the grass inside the shape like on the picture below. Draw the pictures (1 cm for 1m) and explain.

