

HOMEWORK 8,
November 10, 2019

1. Compute:

$$-7 - (-9) =$$

$$-(-6 + (-4)) =$$

$$-3 - (7 + (-6)) =$$

$$-3 - (-4) + (-5) =$$

$$-(-(2) + 5) =$$

$$-\frac{3}{4} - (-1\frac{1}{4}) =$$

$$|(-3) + (-5)| =$$

$$-|3 + (-6)| =$$

$$-|(-2) - (-6)| + 1 =$$

2. Solve equations:

Equations with absolute values.

An equation like $|x| = 5$ has two solutions: $x = 5$ and $x = -5$. An equation like $|x - 1| = 4$ also has two solutions: $x - 1 = 4$ (which gives $x = 5$) or $x - 1 = -4$, which gives $x = -4 + 1 = -3$.

(a) $\frac{3}{4}x = 2$

(b) $\frac{1}{2}x = \frac{1}{4}x + 2$

(c) $\frac{2}{3}x - \frac{1}{4} = \frac{1}{3}x + \frac{1}{2}$

(d) $|x| = 3$

(e) $z + |-6| = -15$

(f) $|y - 8| = 12$

3. Factorize (i.e. pull something out of parenthesis):

(a) $ab + ac =$

(b) $abc + bcd =$

(c) $3ab + 9cd =$

4. Calculate using factorization:

(a) $12 \cdot 17 + 35 \cdot 13 + 17 \cdot 23 =$

(b) $41 \cdot 80 - 25 \cdot 41 + 55 \cdot 29 =$

5. The teacher asked the students to multiply a given number by 4 and then add 15. However, Alex multiplied the number by 15 and then added 4 — and still got the correct answer. What number was it?

6. Two secretaries, Barbara and Marry, need to type a 100 page document. Barbara can type it in 4 hours; Marry types slower, so it would take her 5 hours to do this. How fast can they type it together if they divide the work between two of them in the most efficient way?

7. One can measure temperature using either the Fahrenheit scale (common in the US and Britain) or the Celsius scale (in most other countries). The relation between the two is given by

$$C = \frac{5}{9}(F - 32) \quad [C \text{ in the temperature in Celsius, } F \text{ in Fahrenheit}]$$

(a) Is there a temperature which gives the same value on both scales ($F = C$)?

(b) Is there a temperature which in Fahrenheit scale is twice as large as in Celsius ($F = 2C$)?