

Equations with an absolute value I

Solving equations using the definition of an absolute value.

№1. Solve equations:

1. (*Ukraine 2015*) $\frac{|x|}{10} = 2,$

4. (*Ukraine 2010*) $||2x - 1| - 3| = 5,$

2. (*Ukraine 2021*) $|2x - 1| = 6,$

5. (*Ukraine 2008*) $|x^2 - 6x| = 9,$

3. (*Ukraine 2016*) $|5 - 4x| = 3,$

6. $|x^2 - 12| = 4,$

7. $|x^2 - 5x + 4| = 4.$

№2. (*Ukraine 2011*) Calculate the sum of roots of an equation $|x - 1| = 6$.

№3. (*Ukraine 2008*) Find the root of an equation $|x^2 - 6x| = 9$, which belongs to $(-2; 1]$.

№4. Solve equations:

1. $|x^2 - 3x + 2| = 3x - 2 - x^2,$

2. (*Ukraine 2012*) $|a^3 - a^2| = a^3 - a^2.$

№5. Solve an equation $|2x + 1| = |x + 2|.$