

1-masala yechimi

$|x - 2| = 3 - x$ tenglamada o'ng tomon manfiy bo'lmashligi kerak:
 $3 - x \geq 0 \rightarrow x \leq 3$

Endi holatlar:

1) $x \geq 2$ bo'lsa: $|x - 2| = x - 2$
 $x - 2 = 3 - x$
 $2x = 5$
 $x = 5/2$

Bu qiymat $x \geq 2$ va $x \leq 3$ shartlarga mos.

2) $x < 2$ bo'lsa: $|x - 2| = 2 - x$
 $2 - x = 3 - x$
 $2 = 3$ — mumkin emas.

Javob: $x = 5/2$

2-masala yechimi

Bo'linish nuqtalari: $x = -1$ va $x = 4$.

1) $x \geq 4$:
 $|x + 1| = x + 1, |x - 4| = x - 4$
 $(x + 1) - (x - 4) = 2$
 $5 = 2$ — yechim yo'q.

2) $-1 \leq x < 4$:
 $|x + 1| = x + 1, |x - 4| = 4 - x$
 $(x + 1) - (4 - x) = 2$
 $2x - 3 = 2$
 $2x = 5$
 $x = 5/2$

Oraliqqa mos.

3) $x < -1$:
 $|x + 1| = -x - 1, |x - 4| = 4 - x$
 $(-x - 1) - (4 - x) = 2$
 $-5 = 2$ — yechim yo'q.

Javob: $x = 5/2$

3-masala yechimi

Bo'linish nuqtalari: $x = 1$ va $x = 6$.

1) $x \geq 6$:

$$|x - 1| + |x - 6| = (x - 1) + (x - 6) = 2x - 7$$

$$2x - 7 > 7$$

$$2x > 14$$

$$x > 7$$

2) $1 \leq x < 6$:

$$|x - 1| + |x - 6| = (x - 1) + (6 - x) = 5$$

$5 > 7$ — noto'g'ri, yechim yo'q.

3) $x < 1$:

$$|x - 1| + |x - 6| = (1 - x) + (6 - x) = 7 - 2x$$

$$7 - 2x > 7$$

$$-2x > 0$$

$$x < 0$$

Yechimlarni birlashtiramiz.

Javob: $x < 0$ yoki $x > 7$

4-masala yechimi

$$||x| - 2| \leq 1$$

$t = |x|$ deb olamiz ($t \geq 0$). U holda:

$$|t - 2| \leq 1$$

$$-1 \leq t - 2 \leq 1$$

$$1 \leq t \leq 3$$

Demak: $1 \leq |x| \leq 3$. Bu esa:

$$x \in [-3, -1] \text{ yoki } x \in [1, 3]$$

Javob: $[-3, -1] \cup [1, 3]$

5-masala yechimi

$$|x - 2| + |x + 4| = |x| + 6$$

Bo'linish nuqtalari: $x = -4, 0, 2$.

1) $x \geq 2$:

$$|x - 2| = x - 2, |x + 4| = x + 4, |x| = x$$

$$(x - 2) + (x + 4) = x + 6$$

$$2x + 2 = x + 6$$

$$x = 4$$

Oraliqqa mos.

2) $0 \leq x < 2$:

$$|x - 2| = 2 - x, |x + 4| = x + 4, |x| = x$$

$$(2 - x) + (x + 4) = x + 6$$

$$6 = x + 6$$

$$x = 0$$

Oraliqqa mos.

3) $-4 \leq x < 0$:

$$|x - 2| = 2 - x, |x + 4| = x + 4, |x| = -x$$

$$(2 - x) + (x + 4) = -x + 6$$

$$6 = -x + 6$$

$$x = 0$$

Lekin bu $x < 0$ ga kirmaydi, demak bu oraliqda yechim yo'q.

4) $x < -4$:

$$|x - 2| = 2 - x, |x + 4| = -x - 4, |x| = -x$$

$$(2 - x) + (-x - 4) = -x + 6$$

$$-2 - 2x = -x + 6$$

$$-x = 8$$

$$x = -8$$

Oraliqqa mos.

Javob: $x = -8, 0, 4$