

« - 11: »
 « - 11: ».- 2015.- .1, .3.- .218-221

[1]-[5].

228], [3, 216] [2,

1. $|f(x)| = a$

≥ 0

< 0

$f(x) = a, f(x) = -a$

$\begin{cases} f(x) = a \\ f(x) = -a \end{cases}$

1- $|x-8|=5.$

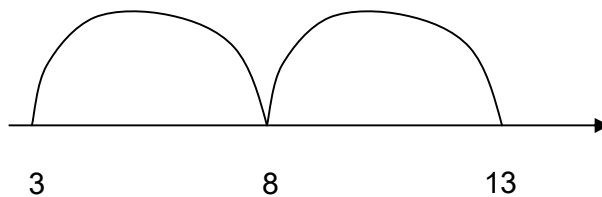
[3, 228 .]

$\begin{cases} -8=5 \\ -8=-5 \end{cases} = 13, = 3. : 3; 13.$

8-

5

$|x-8|=5$



1-судет

: 3; 13

2. $f(|x|) = a$

$$\begin{cases} f(x) = a \\ x \geq 0 \end{cases}$$

$$\begin{cases} f(-x) = a \\ x \leq 0 \end{cases}$$

2- $x^2 - |x - 6| = 0$

$$.1) \begin{cases} \geq 0 \\ x^2 - x - 6 = 0 \end{cases} \quad .2) \begin{cases} < 0 \\ x^2 + x - 6 = 0 \end{cases}$$

$$\begin{cases} \geq 0 \\ x_1 = -2, x_2 = 3 \end{cases} \Leftrightarrow = 3 \begin{cases} < 0 \\ x_1 = 2, x_2 = -3 \end{cases} \Leftrightarrow x = -3. \quad : -3; 3.$$

$$\geq 0$$

$$= x^2 - |x - 6| = 0$$

$$\begin{cases} \geq 0 \\ x^2 - x - 6 = 0, \quad x = -2, \quad x = 3 \end{cases}$$

$$= -3$$

$$: -3; 3.$$

3. $|f(x)| = g(x)$

$$\begin{cases} f(x) = g(x) \\ g(x) \geq 0 \end{cases}$$

$$\begin{cases} f(x) = -g(x) \\ g(x) \geq 0 \end{cases}$$

3- $|3x - 1| = 7x + 11$

$$.3x - 1 = 7x + 11 \quad x_1 = -3 \quad -(3x -$$

$$1) = 7x + 11 \quad x_2 = -1$$

$$x = -1$$

$$, x = -1. \quad : x = -1.$$

4- $|x - 7| = x^3 - 15x^2 + x + 7.$

$$|x - 7| = \begin{cases} x - 7, x \geq 7 \\ 7 - x, x < 7 \end{cases}$$

$$|x - 7| = x^3 - 15x^2 + x + 7$$

$$\begin{cases} x - 7 \geq 0 \\ x - 7 = x^3 - 15x^2 + x + 7 \end{cases} \Leftrightarrow \begin{cases} x - 7 \geq 0 \\ x^3 - 15x^2 + 14 = 0 \end{cases} \Leftrightarrow \begin{cases} x \geq 7 \\ (x - 1)(x^2 - 14x - 14) = 0 \end{cases} \Leftrightarrow$$

$$\begin{cases} x - 7 < 0 \\ x - 7 = -x^3 + 15x^2 - x - 7 \end{cases} \Leftrightarrow \begin{cases} x - 7 < 0 \\ x^3 - 15x^2 + 2x = 0 \end{cases} \Leftrightarrow \begin{cases} x < 7 \\ x(x^2 - 15x + 2) = 0 \end{cases} \Leftrightarrow$$

$$\left\{ \begin{array}{l} x \geq 7 \\ x = 1 \\ x = 7 \pm \sqrt{63} \end{array} \right. \Leftrightarrow \left\{ \begin{array}{l} x = 7 \pm \sqrt{63} \\ x = 0 \\ x = \frac{15 \pm \sqrt{217}}{2} \end{array} \right. : 0; 7 + \sqrt{63}; \frac{15 - \sqrt{217}}{2}.$$

4. $|f(x)| = |g(x)|$

$$|f(x)| = |g(x)| \qquad f^2(x) = g^2(x)$$

$$(f(x) - g(x))(f(x) + g(x)) = 0$$

$$|f(x)| = |g(x)| \Leftrightarrow \begin{cases} f(x) = g(x) \\ f(x) = -g(x) \end{cases}$$

$$|f(x)|^2 = |g(x)|^2 \Leftrightarrow f^2(x) - g^2(x) = 0 \Leftrightarrow (f(x) - g(x))(f(x) + g(x)) = 0$$

$$f(x) = g(x), f(x) = -g(x)$$

5- $|x^5 - 6x^2 + 9x - 6| = |x^5 - 2x^3 + 6x^2 - 13x + 6|$
 $|x^5 - 6x^2 + 9x - 6| \geq 0 \qquad |x^5 - 2x^3 + 6x^2 - 13x + 6| \geq 0$

$$\begin{cases} x^5 - 6x^2 + 9x - 6 = x^5 - 2x^3 + 6x^2 - 13x + 6 \\ x^5 - 6x^2 + 9x - 6 = -x^5 + 2x^3 - 6x^2 + 13x - 6 \end{cases}$$

$$: x = 0; x = \pm\sqrt{2}; x = 1; x = 2; x = 3. \qquad : 0; \pm\sqrt{2}; 1; 2; 3.$$

6- $|x - 2| = |3 - x|$

$$(x - 2)^2 = (3 - x)^2 \Leftrightarrow (x - 2)^2 - (3 - x)^2 \Leftrightarrow (x - 2 - 3 + x)(x - 2 + 3 - x)$$

$$(2x - 5) \cdot 1 = 0, \quad 2x = 5 \quad x = 2,5. \qquad : 2,5.$$

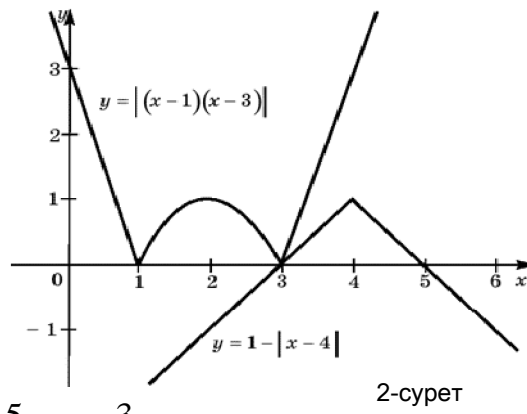
7- $|x - 4| + |(x - 1)(x - 3)| = 1. \qquad : y = |(x - 1)(x - 3)| \qquad y = 1 - |x - 4|$
 $1) y = |(x - 1)(x - 3)| \qquad = 1$

$$= 3 \qquad = 0 \qquad = 3, \qquad (0; 3)$$

$$= 4 \qquad 3-$$

2) $y = 1 - |x - 4| \qquad 1 - |x - 4| = 0$

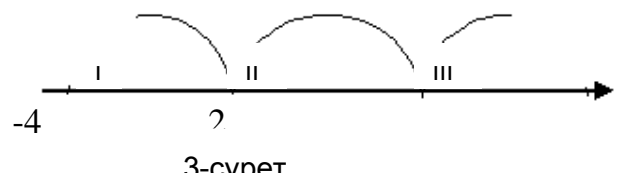
$$: |x - 4| = 1 \Leftrightarrow \begin{cases} x - 4 = 1 \\ x - 4 = -1 \end{cases} \Leftrightarrow \begin{cases} x = 5 \\ x = 3 \end{cases}$$



5 3 : 3 2-сурет

5. $|f_1(x)| + |f_2(x)| + \dots + |f_n(x)| = g(x)$

8- $|2 - 2| - 3| + 4| = 1$
 $= 2, = -4$



I. $\begin{cases} x < -4 \\ -2x + 4 + 3x + 12 = 1 \end{cases} \Rightarrow \begin{cases} x < -4 \\ x = -15 \end{cases} \Rightarrow x = -15$

II. $\begin{cases} -4 \leq x < 2 \\ -2x + 4 - 3x - 12 = 1 \end{cases} \Rightarrow \begin{cases} -4 \leq x < 2 \\ -5x = 9 \end{cases} \Rightarrow \begin{cases} -4 \leq x < 2 \\ x = -1,8 \end{cases} \Rightarrow x = -1,8$

III. $\begin{cases} x \geq 2 \\ 2x - 4 - 3x - 12 = 1 \end{cases} \Rightarrow \begin{cases} x \geq 2 \\ -x = 17 \end{cases} \Rightarrow \begin{cases} x \geq 2 \\ x = -17 \end{cases} \Rightarrow x = -17$

Answers: $-15; -1,8$

9- $|2 - |x+1|| = 3$
 $|x+1| = y$
 $|2 - y| = 3 \Leftrightarrow \begin{cases} 2 - y = 3 \\ y - 2 = 3 \end{cases} \Rightarrow \begin{cases} y = -1 \\ y = 5 \end{cases}$
 (1) $|x+1| = -1$

(2) $|x+1| = 5 \Leftrightarrow \begin{cases} x+1 = 5 \\ -x-1 = 5 \end{cases} \Rightarrow \begin{cases} x = 4 \\ x = -6 \end{cases}$

6- [1], [2]

