11. (B) $|a+1| - |\beta+1| + |\beta-a| \overset{(*)}{=}$ Ενότητα 8

$a < -1 < \beta$

- $a < -1 \Rightarrow a+1 < 0$
- $\beta > -1 \Rightarrow \beta+1 > 0$
- $a < \beta \Rightarrow \beta - a > 0$

$\overset{(*)}{=} -a-1-(\beta+1)+(\beta-a)$

$= -a-1-\beta-1+\beta-a$

$= -2a-2.$

12. (B) $B = |a+3| - |a-2|$

(+) (−)

$-2 < a < 1$

- $-2 < a < 1 \Rightarrow 1 < a+3 < 4$

- $-2 < a < 1 \Rightarrow -4 < a-2 < -1$

$B = a+3 - (-a+2)$

$B = a+3+a-2$

$B = 2a+1$

13. (α) $|\overset{(+)}{3x-y}| = 3x-y$

- $1<x<3 \Rightarrow 3<3x<9 \Rightarrow 9>3x>3$ } (+)
- $2<y<3 \Rightarrow -2>-y>-3$

$$7>3x-y>0$$

(β) $|\overset{(-)}{xy-9}| = 9-xy$

- $1<x<3$
- $2<y<3$

} $2<xy<9$

$$-7<xy-9<0$$

(γ) $|\overset{(+)}{x-\frac{1}{y}}| = x-\frac{1}{y}$ (+)

- $1<x<3$
- $2<y<3 \Rightarrow \frac{1}{2}>\frac{1}{y}>\frac{1}{3} \Rightarrow -\frac{1}{2}<-\frac{1}{y}<-\frac{1}{3}$

$$\frac{1}{2}<x-\frac{1}{y}<\frac{8}{3}$$

16. $A = \left| \overset{(-)}{x - |x|} \right| - \left| \overset{(+)}{x + |x|} \right|$

- $|x| \geq x \Rightarrow 0 \geq x - |x|$
- $|x| \geq -x \Rightarrow |x| + x \geq 0$

$$A = -x + |x| - (x + |x|)$$

$$A = -x + |x| - x - |x|$$

$$A = -2x$$

21. (γ) $3|x| - 5 = 0$.

$$3|x| = 5$$

$$|x| = \frac{5}{3}$$

$$x = \frac{5}{3} \quad \text{ή} \quad x = -\frac{5}{3}$$

(ε) $2|x| - 5|-x| + 6 = 0$

$$2|x| - 5|x| + 6 = 0$$

$$|-x| = |x|$$

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

$$|x| = 2$$

$$x = \pm 2$$

(ϛ) $|2x| - \left|\frac{x}{2}\right| - 1 = 0$

$$|a\beta| = |a||\beta|$$

$$\left|\frac{\alpha}{\beta}\right| = \frac{|\alpha|}{|\beta|}$$

$$|2||x| - \frac{|x|}{|2|} - 1 = 0$$

$$2|x| - \frac{|x|}{2} - 1 = 0$$

$$4|x| - |x| - 2 = 0$$

$$3|x| = 2$$

$$x = \pm \frac{2}{3}$$

21. (7) $x^2 - 2|x| = 0$

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

$x^2 = |x|^2$

$|x|(|x| - 2) = 0$

$|x| = 0$ ή $|x| - 2 = 0$

$|x| = 2$

$x = 0$

$x = \pm 2$

24. (8) $2 - 3|x| \leq 0$

$-3|x| \leq -2$

$|x| \geq \frac{2}{3}$

$x \geq \frac{2}{3}$ ή $x \leq -\frac{2}{3}$

$x \in (-\infty, -\frac{2}{3}] \cup [\frac{2}{3}, +\infty)$

Απόλυτη Τιμή

Εξισώσεις - Ανισώσεις

1. $|2x-7|=5$

$2x-7=5$ ή $2x-7=-5$

$2x=12$ $2x=2$

$x=6$ $x=1$

2. $|3-x|=6$

$3-x=6$ ή $3-x=-6$

$-3=x$ $9=x$

3. $|3x-2| = |x+4|$

$3x-2 = x+4$

$3x-x = 4+2$

$2x = 6$

$x = 3$

ve

$3x-2 = -x-4$

$3x+x = 2-4$

$4x = -2$

$x = -\frac{1}{2}$

4. $\left|\frac{x}{2}\right| = |2x-3|$

$\frac{x}{2} = 2x-3$

$x = 4x-6$

$x-4x = -6$

$-3x = -6$

$x = 2$

ve

$\frac{x}{2} = -2x+3$

$x = -4x+6$

$5x = 6$

$x = \frac{6}{5}$.

5. $|5x-10|=0$

$5x-10=0$

$5x=10$

$x=2$

6. $|2x+1|=-4$ Δδωση.

7. $|3x-6| \leq 0$

$|3x-6|=0$

$3x-6=0$

$x=2$

8. $|4x-5|>0$ $x \in \mathbb{R}-\{\frac{5}{4}\}$.

$\rightarrow 4x-5=0$

$x=\frac{5}{4}$

9. $|x-2| < |x+4|$

$|x|^2 = x^2$

$|x-2|^2 < |x+4|^2$

$(x-2)^2 < (x+4)^2$

$x^2 - 4x + 4 < x^2 + 8x + 16$

$-4x - 8x < 16 - 4$

$-12x < 12$

$x > -1$

---

10. $|x-5| + |2x-10| = 0$.

$x-5=0$ ou $2x-10=0$

$x=5$

$x=5$

11. $|2x-3| = 7$

$2x-3 = 7$ ve $2x-3 = -7$

$2x = 10$ $\quad$ $2x = -4$

$x = 5$ $\quad$ $x = -2$

12. $|x+5| = |3x-1|$

$x+5 = 3x-1$ ve $x+5 = -3x+1$

$x-3x = -1-5$ $\quad$ $x+3x = 1-5$

$-2x = -6$ $\quad$ $4x = -4$

$x = 3$ $\quad$ $x = -1$

13. $\left|\frac{x}{3}-1\right| = 2$

$\frac{x}{3}-1 = 2$ ve $\frac{x}{3}-1 = -2$

$\frac{x}{3} = 3$ $\quad$ $x = 9$ $\quad$ $\frac{x}{3} = -1$

$x = -3$

14 $|2-x| = |2x+1|$

$2-x = 2x+1$ ó $2-x = -2x-1$

$-3x = -1$

$x = -3$

$x = \frac{1}{3}$

15. $|x-4| + |x+1| = 0$

$x-4=0$ ou $x+1=0$

$x=4$

$x=-1$

Absurdo

16. $|2x-1| \geq -3$, $x \in \mathbb{R}$.

17. $|5x+2| < 0$ Абсолют.

18. $|3x+6| \geq 0$ $x \in \mathbb{R}$.

19. $|x+1| \leq |x-5|$

$|x+1|^2 \leq |x-5|^2$

$(x+1)^2 \leq (x-5)^2$

$x^2+2x+1 \leq x^2-10x+25$

$2x+10x \leq 24$

$12x \leq 24$ $\quad x \leq 2$

20. $|x^2-16| + |x-4| = 0$

$x^2-16=0$ veya $x-4=0$

$x=4$ $\quad x=-4$ $\quad x=4$

Пробник

$$d(\alpha, \beta) = |\alpha - \beta|$$

п. х

$$d(x, -2x+1) \leq 5$$

$$|x - (-2x+1)| \leq 5$$

$$|x + 2x - 1| \leq 5$$

$$|3x - 1| \leq 5$$

$$-5 \leq 3x - 1 \leq 5$$

$$-4 \leq 3x \leq 6$$

$$-\frac{4}{3} \leq x \leq 2$$

Επόμενο μάθημα

Ημερομηνία μαθήματος : Παρασκευή 23/10

Ώρα μαθήματος : 17:30 .

Ασκήσεις

Ενότητα 8.

17 19
18 30
19 32
22
23
26

παρατηρήσεις

Πρώτα θα λύσω την Ασκ 27 σελ 114
και Τριγωνικά ομοιόσχια.