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Kelas: TI 01

1 Nyatakan dalam garis bilangan dan notasi selang, masalah =  
masalah himpunan berikut:

a.  $x < 2$

b.  $x \geq 8$

c.  $-2 < x < 8$

d.  $-8 \leq x \leq 2$

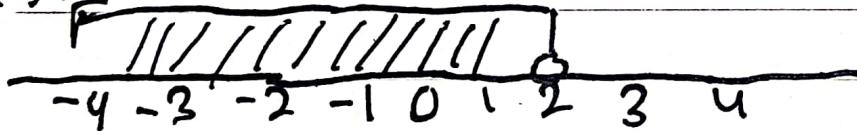
e.  $x < -2$  atau  $x > 8$

f.  $x \leq -8$  atau  $x \geq 2$

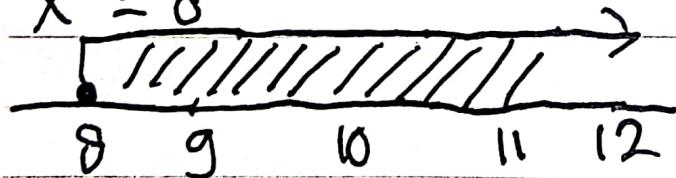
2 Jawaban

Bagian I

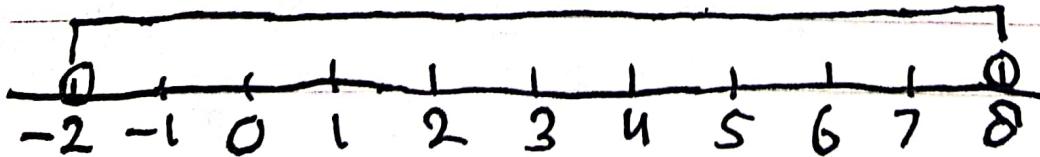
a.  $x \leq 2$



b.  $x \geq 8$

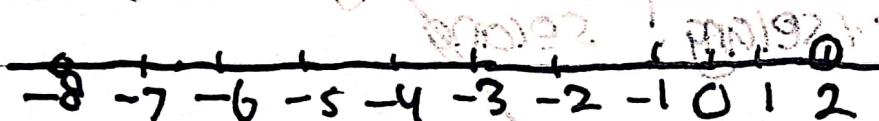


c.  $-2 < x < 8$



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$$d - 8 \leq x \leq 2$$

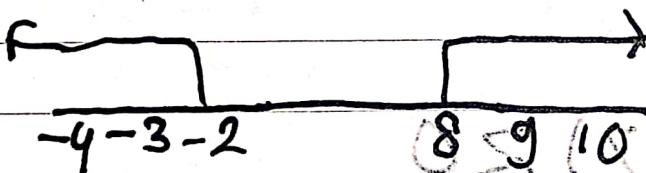


$$e \quad x < -2 \quad \text{atan} \quad x > 8$$

## Ueterangan

$$x < -2 = -3, -4, -5 \text{ dst}$$

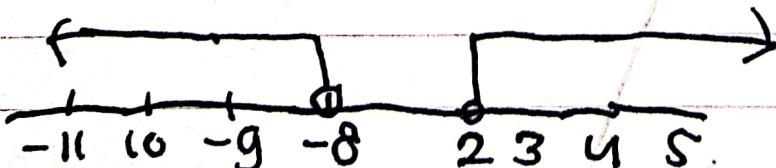
$$x > 8 = 9, 10, 11,$$



$$F \quad X \leq -8 \quad \text{dtau} \quad x \geq 2$$

$$x \leq -8 = -9, -10, -11$$

$$x \geq 2 = 3, 4, 5, 6$$



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2) a.  $3x - 5 < 4x + 6$

$$3x - 5 < 4x + 6$$

$$3x - 5 < 4x + 6$$

$$-x < 11$$

$$x > -1$$

$$0 < x < 11$$

$$-1 < x$$

notasi:  $(-1, 11)$

b.  $5x - 3 > 6x + 4$

$$-x > -4 + 3$$

$$-x > -1$$

$$x < 1$$

notasi  $(-\infty, 1)$

c.  $-3 < 4x - 9 < 11$

$$-3 + 9 < 4x < 11 + 9$$

$$6 < 4x < 20$$

$$3 < 2x < 10$$

$$\frac{3}{2} < x < 5$$

notasi:  $\left(\frac{3}{2}, 5\right)$

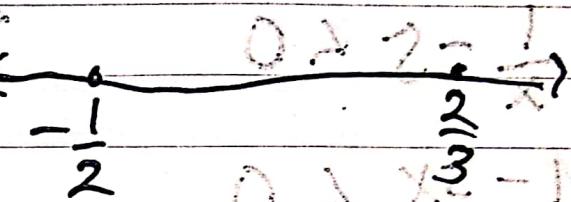
Nama: Wira Srima Saputro  
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$$d - 3 < 1 - 6x \leq 4$$

$$-3 - 1 \leq -6x \leq 4 - 1$$

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

$$\frac{-4}{-6} \geq x \geq \frac{3}{-6}$$



$$\text{notasi: } \left(-\frac{1}{2}, \frac{3}{2}\right]$$

$$e. 2x + 3 \leq 6 - 7x \leq 3x + 11$$

$$2x + 9 \leq -7x \leq 3x + 5$$

$$9x - 9 \leq 0 \leq 10x + 5$$

$$\frac{9}{10} \leq x \leq \frac{5}{-2}$$

$$2+X$$

$$F. x^2 + x - 12 > 0$$

$$(x+4)(x-3) > 0$$

$$0 < (2+x) < 0$$

$$2+X$$

$$\frac{1}{-4} < \frac{1}{3} : 18 \text{ miliar}$$

$$x < -4 \text{ atau } x > 3$$

$$0 < 01 - X < 0$$

$$2+X$$

$$\text{notasi: } (-\infty, -4) \text{ atau } (3, \infty)$$

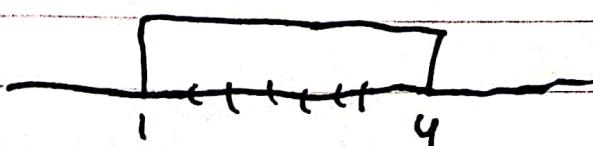
$$g. 3x^2 - 11x - 4 \leq 0$$

$$(3x+1)(x-4) \leq 0$$

$$3x + 1 = 0 \cup x - 4 = 0$$

$$3x = -1 \quad x = 4$$

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



$$\text{notasi: } \left[-\frac{1}{3}, 4\right]$$

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$$3) a \frac{1}{x} < 5$$

$$\frac{1}{x} - 5 < 0$$

$$1 - 5x < 0$$

$\frac{1}{x} < 5$   
 $x > \frac{1}{5}$  atau  $x < 0$   
 Lantaran notasi  $(-\infty, 0)$  atau  $(\frac{1}{5}, \infty)$

$$b \frac{3}{x+s} > 2$$

$$\frac{3}{x+s} - 2 > 0$$

$$-2x - 7 = 0 \quad \text{atau} \quad x + 5 = 0$$

$$2 + x > 2x = 7 \quad \Rightarrow x < -5$$

$$2 + x > x = \frac{7}{2} \quad \Rightarrow x > \frac{7}{2}$$

$$\frac{3-2(x+s)}{x+s} > 0$$

$$-5 < x < \frac{7}{2}$$

$$0 < (x-s) / (\frac{7}{2}-x)$$

notasi:  $(-5, \frac{7}{2})$

$$\frac{3-2x-10}{x+s} > 0$$

$$\frac{-7-2x}{x+s} > 0$$

$$x < y \text{ atau } y < x$$

$(0, \infty) \cup (-\infty, -5)$

$$0 > y - x \text{ atau } x > y$$

$$(0 > (y-x) / (x-y))$$

$$0 > y - x \cup 0 > x - y$$

$$0 > x$$

$$1 > x$$

$$\Sigma$$

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 Kelas: TI 01  
 Tgl: 10/11/2020

$$c) \frac{2x-1}{x-3} \geq 1 \quad 0 \leq p+x \text{ untuk } 0 \leq q-x < b$$

$$p = x \quad 0 \leq q = x$$

$$q = x \quad 0 \leq x$$

$$\frac{2x-1}{x-3} - 1 \geq 0$$

$$p = x+2 = 0 \text{ atau } x-3 = 0$$

$$x = -2 \quad x = 3$$

$$\frac{2x-1 - (x-3)}{x-3} \geq 0 \quad \text{untuk } x \neq 3$$

$$0 \leq x \leq (x+2)(x-3) \quad 0 \leq x \leq 3$$

$$\frac{2x-1 - (x-3)}{x-3} \geq 0 \quad \text{notasi: } (-\infty, -2] \cup [3, \infty)$$

$$x-3 \quad 1 \leq x$$

$$\frac{x+2}{x-3} \geq 0$$

$$1 \quad 1 \quad \dots$$

$$d) \frac{x-2}{x+4} \leq 2 \quad -x-10 \leq 0 \quad \text{untuk } x \neq -4$$

$$\frac{x-2}{x+4} - 2 \leq 0 \quad 0 \leq (2-x) \quad (1-x)(x+4) \geq 0$$

$$x-2 \leq 2(x+4) \leq 0 \quad x \leq -4 \quad x \leq -4$$

$$x+4 \quad 1 \leq x$$

$$\frac{x-2-2x-8}{x+4} \leq 0$$

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d.  $-x - 10 = 0$  atau  $x + 4 \geq 0$

$$\begin{aligned} -x &= 10 & x &= -4 \\ x &= -10 & & \end{aligned}$$

$$0 = 2 - x \text{ dan } -10 = 5 + x \Rightarrow -4$$

$$2 < x \quad 2 > x$$

notasi:  $(-\infty, -10)$  atau  $(-4, \infty)$

e  $(x+2)(2x-1)(3x+7) \geq 0$

$$\begin{aligned} (x+2) &= 0 \Rightarrow x = -2 \\ 2x-1 &= 0 \Rightarrow x = \frac{1}{2} \\ 3x+7 &= 0 \Rightarrow x = -\frac{7}{3} \end{aligned}$$

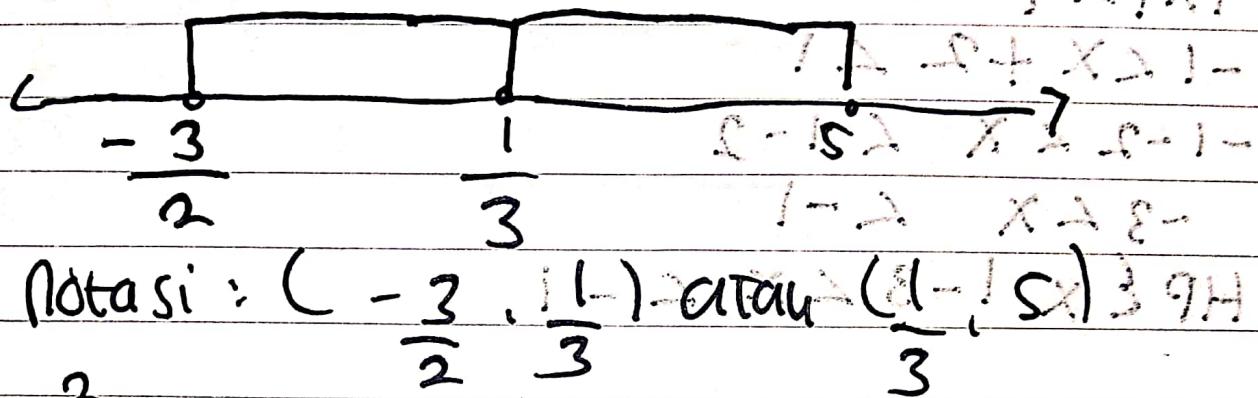
notasi:  $(-\frac{7}{3}, -2) \cup (\frac{1}{2}, \infty)$

f  $(2x+3)(3x-1)^2(x-5) < 0$

$$\begin{aligned} 2x+3 &= 0 & 3x-1 &= 0 & x-5 &= 0 \\ 2x &= -3 & 3x &= 1 & x &= 5 \\ x &= -\frac{3}{2} & x &= \frac{1}{3} & & \end{aligned}$$

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Tgl: 2021/08/10



$$g) x^3 - 5x^2 - 6x < 0$$

$$x(x+6)(x-1) < 0$$

$$x = 0 \quad x = -6 \quad x = 1$$

$$\frac{-6 \quad x \quad 1}{0 \quad G}$$

$$x < 0 \quad 1 - x > 0$$

$$1 - x > 0 \quad x < 1$$

$$1 - x > 0 \quad x < 1$$

$$4.) a) 1,99 < \frac{1}{x} < 2,01$$

$$\frac{1}{1,99} > x > \frac{1}{2,01}$$

$$1,99 \leq x < 2,01$$

$$2,01 \geq x < 1,99$$

$$\frac{1}{2,01} \leq x < \frac{1}{1,99}$$

$$2,01 \geq x < 1,99$$

$$\frac{1}{1,99} \leq x < \frac{1}{2,01}$$

$$2,01 \geq x < 1,99$$

notasi:  $(\frac{1}{2,01}, \frac{1}{1,99})$

$$b) 2,99 < \frac{1}{x+2} < 3,01$$

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 Tanggal: 10.17.2020

5) a)  $|x+2| < 1$

$$-1 < x+2 < 1$$

$$-1-2 < x < 1-2$$

$$-3 < x < -1$$

$$\text{HP } \{x | -3 < x < -1\} : \text{ir. d. b.}$$

b)  $|2x-1| > 2$

$$2x-1 < -2$$

$$2x < -2 + 1$$

$$2x < -1$$

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

$$\text{HP } \{x | -\frac{1}{2} < x > \frac{3}{2}\}$$

c)  $|4x+5| \leq 10$

$$4x+5 \leq 10$$

$$4x \leq 10-5$$

$$4x \leq 5$$

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

$$\text{atau } 4x+5 \geq -10$$

$$4x \geq -10-5$$

$$4x \geq -15$$

$$x \geq -\frac{15}{4}$$

$$\text{HP } \{x | -\frac{15}{4} \leq x \leq \frac{5}{4}\}$$

$$\text{PP } \{x | -10 \leq x \leq 10\}$$

$\leq x$

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ID IT : 2023N

28.001.801.000, MM VI

d  $|5x - 6| > 1$

$$5x - 6 < -1 \quad \text{atau} \quad 5x - 6 > 1$$

$$5x < -1 + 6 \quad \text{Jadi} \quad 5x > 1 + 6$$

$$5x < 5 \quad \text{Jadi} \quad x < 1$$

$$x < \frac{(-1) - 1}{5} \quad \text{Jadi} \quad x < \frac{-2}{5}$$

e  $\left| \frac{x+1}{4} \right| < 1$

$$-1 < \frac{x+1}{4} < 1$$

$$-4 < x+1 < 4$$

$$-5 < x < 3$$

$$\text{HP } \{x \mid -5 < x < 3 \}$$

f  $\left| \frac{1}{x} - 3 \right| > 6 \rightarrow |1 - 3x| > 6$

$$\frac{1 - 3x}{x} > 6 \quad \text{atau} \quad \frac{1 - 3x}{x} < -6$$

$$1 - 3x > 6x \quad \text{atau} \quad 1 - 3x < -6x$$

$$1 - 9x > 0 \quad \text{atau} \quad 1 + 3x < 0$$

$$\text{HP } \{x \mid x < \frac{1}{9} \text{ atau } x > -\frac{1}{3} \}$$

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$$6. a x^2 - 3x - 4 \geq 0 \quad | -x^2$$

$$a=1, b=-3, c=-4 \quad \text{MJD}$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \quad | + 1 - \rightarrow x_2$$

$$x = \frac{-(-3) \pm \sqrt{(-3)^2 - 4(1)(-4)}}{2(1)} \quad | + 1 - \rightarrow x_2$$

$$x = \frac{3 \pm \sqrt{9 + 16}}{2} \quad | + 1 + \frac{x}{\cancel{2}}$$

$$x = \frac{3 + \sqrt{25}}{2} \quad | + 1 + \frac{x}{\cancel{2}} = 1 -$$

$$= \frac{3+5}{2} \quad | + 1 + \frac{x}{\cancel{2}} = 1 -$$

$$x_1 = \frac{3+5}{2} = \frac{8}{2} = 4 \quad | + 1 + \frac{x}{\cancel{2}} = 1 -$$

$$x_2 = \frac{3-5}{2} = \frac{-2}{2} = -1 \quad | + 1 + \frac{x}{\cancel{2}} = 1 -$$

maka,  $x_1 = 4$  atau  $x_2 = -1$

$$b. x^2 - 4x + 4 \leq 0 \quad | -1 \quad | \leq x \leq \frac{4}{2}$$

$$a=1, b=-4, c=4$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \quad | + 1 - \rightarrow x_2$$

$$x = \frac{-(-4) \pm \sqrt{(-4)^2 - 4 \cdot 1 \cdot 4}}{2(1)} \quad | + 2 - \rightarrow x_2$$

$$x = \frac{4 \pm \sqrt{16-16}}{2} \quad | + 2 - \rightarrow x_2$$

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Kelas: TI 01

10 ST, 2019N

$$3x^2 + 17x - 6 \geq 0$$

$$0 \geq 21 - x^2 - x$$

$$a = 3, b = 17, c = -6 \Rightarrow 21 - x^2 - x = 0$$

$$x = \frac{(-b \pm \sqrt{b^2 - 4ac})}{2a}$$

$$x = \frac{-17 \pm \sqrt{17^2 - 4 \cdot 3 \cdot (-6)}}{2 \cdot 3} = \frac{-17 \pm \sqrt{289}}{6}$$

$$x = \frac{-17 \pm \sqrt{289}}{6} = \frac{-17 \pm 17}{6}$$

$$= \frac{-17 \pm \sqrt{361}}{6}$$

$$= \frac{-17 + 19}{6}$$

$$x_1 = \frac{-17 + 19}{6} = \frac{2}{6}$$

$$x_2 = \frac{-17 - 19}{6} = \frac{-36}{6} = -6$$

$$0.8 + 1.5V \pm 11 =$$

8c

$$1.5V + 11 =$$

8c

$$1.5 + 11 =$$

8c

$$1.5 + 11 = 12.5$$

8c

8c

5N

8c

8c

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kelas: TI 01

d.  $14x^2 - 11x - 15 \leq 0$

$$a = 14, b = -11, c = -15$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-(-11) \pm \sqrt{(-11)^2 - 4(14)(-15)}}{2(14)} = \frac{11 \pm \sqrt{121 + 840}}{28}$$

$$x = \frac{11 \pm \sqrt{121 + 840}}{28}$$

$$x = \frac{11 \pm \sqrt{961}}{28}$$

$$x = \frac{11 + 31}{28}$$

$$x_1 = \frac{11 + 31}{28} \text{ atau } x_2 = \frac{11 - 31}{28}$$

$$= \frac{42}{28}$$

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

$$= \frac{-20}{28}$$

$$= \frac{-5}{7}$$

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10 ST : 2109N

7. a)  $|x-1| < 2 \quad |x+2| > 3 \quad |2-x| > 5$

$$|x-1| < 12x + 6 \quad |x+2| > 3 - x^2$$

$$(x-1)^2 < (2x+6)^2 \Rightarrow (3-x^2) > 0$$

$$x^2 - 2x + 1 < 4x^2 + 24x + 36 \Rightarrow x^2 + 26x + 35 < 0$$

$$3x^2 + 22x + 35 > 0 \Rightarrow (3x+5)(x+7) > 0$$

$$(3x+5)(x+7) > 0$$

HP

b)  $|2x-1| \geq |x-1| \quad |2x-1|^2 \geq |x-1|^2 \quad (2x-1)^2 \geq (x-1)^2$

$$4x^2 - 4x + 1 \geq x^2 - 2x + 1 \Rightarrow 3x^2 - 2x \geq 0$$

$$x(3x-2) \geq 0$$

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 Kelas: TI 01  
 Tgl: 10/11/2019

$$\begin{aligned}
 & c \quad 2|2x-3| < |x+10| \\
 & |4x-6| < |x+10| \\
 & (4x-6)^2 < (x+10)^2 \\
 & 16x^2 - 48x + 36 < x^2 + 20x + 100 \\
 & 15x^2 - 68x - 64 < 0 \\
 & (5x+4)(3-x) < 0
 \end{aligned}$$

$$\begin{aligned}
 & d \quad |3x-1| < 2|x-6| \\
 & |3x-1| < |2x-12| \\
 & (3x-1)^2 < (2x-12)^2 \\
 & 9x^2 - 6x - 1 < 4x^2 + 48x + 144 \\
 & 5x^2 + 42x - 145 < 0 \\
 & (5x-13)(x+11) < 0
 \end{aligned}$$

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$$8) \frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$$

$$10 \leq R_1 \leq 20, \quad 20 \leq R_2 \leq 30, \quad 30 \leq R_3 \leq 40$$

$$\frac{1}{10} \geq \frac{1}{R_1} \geq \frac{1}{20}, \quad \frac{1}{20} > \frac{1}{R_2} \geq \frac{1}{30}, \quad \frac{1}{30} > \frac{1}{R_3} \geq \frac{1}{40}$$

$$\frac{1}{20} \leq \frac{1}{R_1} \leq \frac{1}{10}, \quad \frac{1}{30} \leq \frac{1}{R_2} \leq \frac{1}{20}, \quad \frac{1}{40} \leq \frac{1}{R_3} \leq \frac{1}{30}$$

$$\frac{1}{R} = \frac{1}{R_3} + \frac{1}{R_2} = \frac{1}{R_1}$$

$$\frac{1}{R} = \left( \frac{1}{40} \cdot \frac{1}{30} \right) + \left( \frac{1}{30} \cdot \frac{1}{20} \right) + \left( \frac{1}{20} \cdot \frac{1}{10} \right)$$

$$\text{Interval } \frac{1}{R} = \left( \frac{1}{40} \cdot \frac{1}{10} \right) \Leftrightarrow \frac{1}{40} \leq \frac{1}{R} \leq \frac{1}{10}$$

$$\text{Interval } R = 10 \leq R \leq 40$$