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KELAS:IF1A

TUGAS 5

1A. GAMBARKAN GRAFIK GARIS

1A A. $y = -x^2 + 5x - 6$

a=-1, b=5, c=-6

titik potong sumbu x, y=0

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

$(x - 2)(-x + 3) = 0$

Untuk, $x - 2 = 0$

$x = 2$

$-x + 3 = 0$

$x = 3$

Jadi, titik potong sumbu x, $(2,0)\ dan\ (3,0)$

Titik potong sumbu y, x=0

$y = -x^2 + 5x - 6$

$= -(0)^2 + 5(0) - 6$

$= -6$

Titik potong sumbu y, $(0, -6)$

Sumbu simetri,

$x = \frac{-b}{2a}$

$x = \frac{-5}{2(-1)}$

$= \frac{-5}{-2}$

$= 2{,}5$

$y = \frac{-D}{4a}$

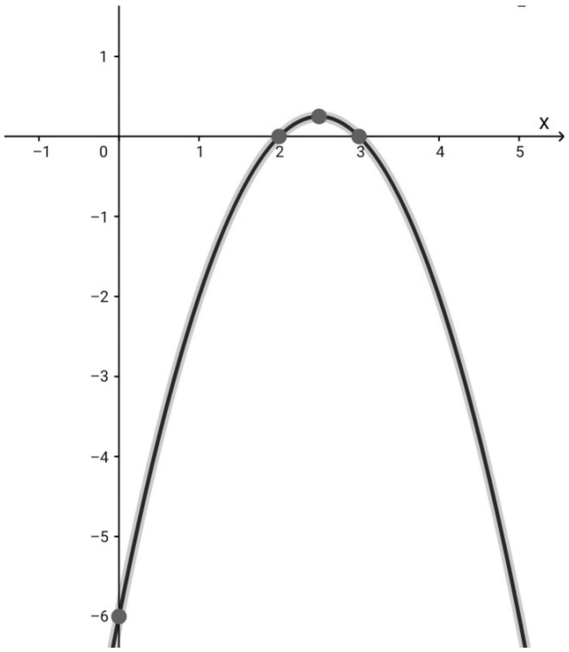
$= \frac{-b^2 - 4ac}{4a}$

$= \frac{-5^2 - 4(-1)(-6)}{4(-1)}$

$= \frac{25 - 24}{-4}$

$= \frac{1}{-4} = -0{,}25$

a<0, titik koordinat $sumbu\ simetri(x, -y) = (2{,}5, 0{,}25)$



1A B. $x = y^2 + y - 2$

$y = x^2 + x - 2$

Titik potong sumbu x, y=0

$x^2 + x - 2 = 0$

$(x + 2)(x - 1) = 0$

$x + 2 = 0$

$x = -2$

$x - 1 = 0$

$x = 1$

Titik potong sumbu x, $(-2,0) dan\ (1,0)$

Titik potong sumbu y, x=0

$y = x^2 + x - 2$

$= (0)^2 + 0 - 2$

$= -2$

Jadi, titik potong sumbu y, $(0, -2)$

Sumbu simetri,

$x = \frac{-b}{2a}$

$= \frac{-1}{2(1)}$

$= -\frac{1}{2} = -0{,}5$

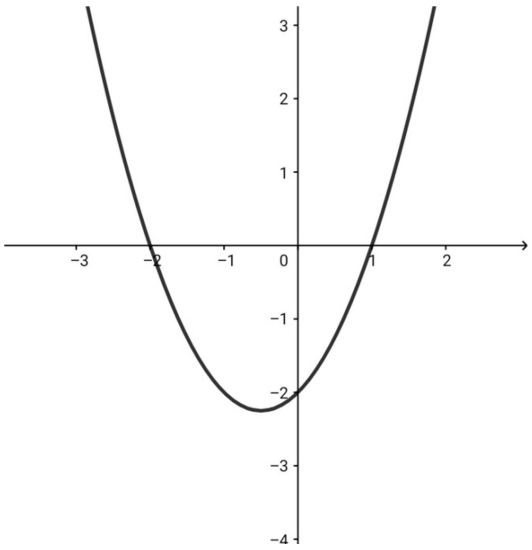
$y = \frac{-b^2 - 4ac}{4a}$

$= \frac{-1^2 - 4(1)(-2)}{4(1)}$

$= \frac{1 + 8}{4}$

$= \frac{9}{4} = 2{,}25$

$jadi, sumbu\ simetri\ tersebut\ adal \quad (x, -y) = (-0{,}5, -2{,}25)$



1B. CARILAH TITIK POTONG ANTARA KEDUA GARIS BERIKUT DAN GAMBARKAN;

1B A. $y = x^2 + 7x + 12 \; dan \; x = y - 1$

$y = x^2 + 7x + 12$

Titik potong sumbu x, y=0

$x^2 + 7x + 12 = 0$

$(x + 3)(x + 4) = 0$

$x + 3 = 0$

$x = -3$

$x + 4 = 0$

$x = -4$

Titik potong sumbu x, $(-3,0) \; dan \; (-4,0)$

Titik potong sumbu y, x=0

$y = x^2 + 7x + 12$

$= (0)^2 + 7(0) + 12$

$= 12$

Titik potong sumbu y, $(0,12)$

Sumbu simetri,

$x = \frac{-b}{2a}$

$= \frac{-7}{2(1)}$

$= -\frac{7}{2} = -3,5$

$y = \frac{-b^2 - 4ac}{4a}$

$= \frac{-7^2 - 4(1)(12)}{4(1)}$

$= \frac{49 - 48}{4}$

$= \frac{1}{4} = 0{,}25$

jadi titik sumbu simetri tersebut adalah $(x, -y) = (-3{,}5, -0{,}25)$

$x = y - 1$

$misal, x = 0$

$x = y - 1$

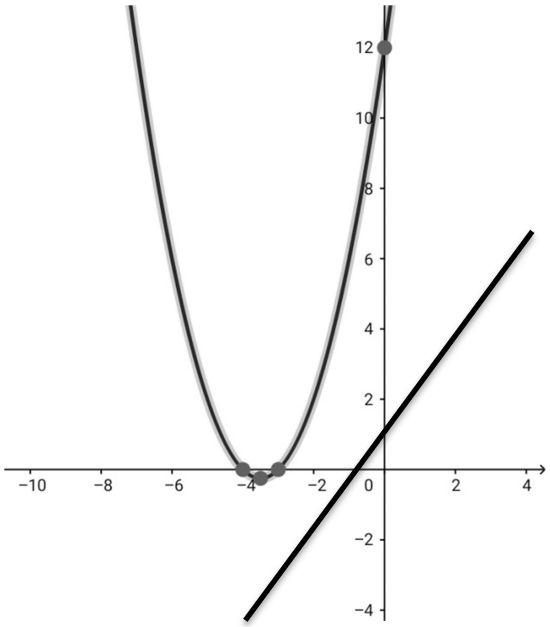
$0 = y - 1$

$y = 1$

$Misal, y = 0$

$x = 0 - 1$

$x = -1$



$jadi, kedua\ garis\ tersebut\ tidak\ berpotongan.$

1B B. $y = x^2 + 9x + 20\ dan\ y = -x^2 + x - 12$

$y = x^2 + 9x + 20$

Titik potong sumbu x, y=0

$x^2 + 9x + 20 = 0$

$(x + 4)(x + 5) = 0$

$x + 4 = 0$

$x = -4$

$x + 5 = 0$

$x = -5$

Titik potong sumbu x, $(-4,0) dan\ (-5,0)$

Titik potong sumbu y, x=0

$y = x^2 + 9x + 20$

$= (0)^2 + 9(0) + 20$

$= 20$

Titik potong sumbu y, $(0,20)$

Sumbu simetri,

$x = \frac{-b}{2a}$

$= \frac{-9}{2(1)}$

$= -\frac{9}{2} = -4,5$

$y = \frac{-b^2 - 4ac}{4a}$

$= \frac{-9^2 - 4(1)(20)}{4(1)}$

$= \frac{81 - 80}{4}$

$= \frac{1}{4} = 0,25$

Sumbu simetri tersebut adalah $(x, -y) = (-4,5, -0,25)$

$y = -x^2 + x - 12$

Titik potong sumbu x, y=0

$-x^2 + x - 12 = 0$

$a = -1, b = 1, c = -12$

Menggunakan rumus kuadrat

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

$$= \frac{-1 \pm \sqrt{1^2 - 4(-1)(-12)}}{2(-1)}$$

$$= \frac{-1 \pm \sqrt{1 - 48}}{-2}$$

$$= \frac{-1 \pm \sqrt{-47}}{-2}$$

$$x_1 = \frac{-1 + \sqrt{-47}}{-2} \; atau \; x_2 = \frac{-1 - \sqrt{-47}}{-2}$$

Titik sumbu y, x=0

$$y = -x^2 + x - 12$$

$$= (0)^2 + 0 - 12$$

$$= -12$$

Titik potong sumbu y, $(0, -12)$

Sumbu simetri,

$$x = \frac{-b}{2a}$$

$$= \frac{-1}{2(-1)}$$

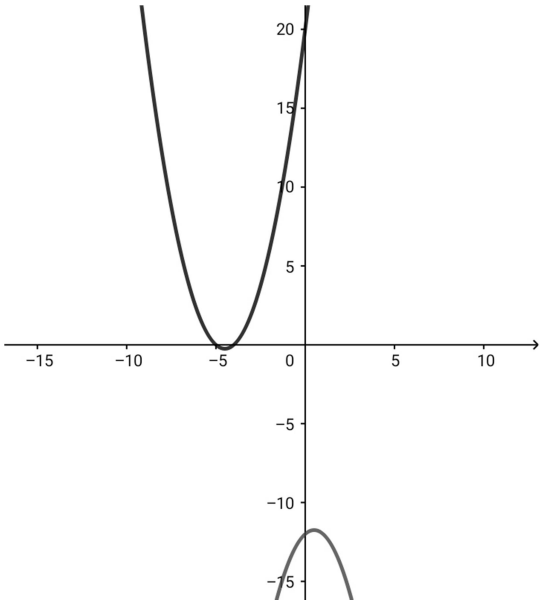
$$= \frac{1}{2} = 0{,}5$$

$$y = \frac{-b^2 - 4ac}{4a}$$

$$= \frac{-1^2 - 4(-1)(-12)}{4(-1)}$$

$$= \frac{1 - 48}{-4}$$

$$= \frac{47}{4} = 11{,}75$$



Kedua garis tidak berpotongan.

2A. TENTUKAN HIMPUNAN PENYELESAIAN DARI PERTIDAKSAMAAN BERIKUT:

2A A. $2x - 3 \leq 2x^2 - 3x < x^2 - 2$

$2x - 3 \leq 2x^2 - 3x < x^2 - 2$ $(ketiga\ ruas\ tamb\quad 3x)$

$5x - 3 \leq \quad 2x^2 \quad < x^2 + 3x - 2$ $(ketiga\ ruas\ di\ kurang\ 2x^2)$

$-2x^2 + 5x - 3 \leq \quad 0 \quad < x^2 - 2x^2 + 3x - 2$ $(ketiga\ ruas\ di\ kali - 1)$

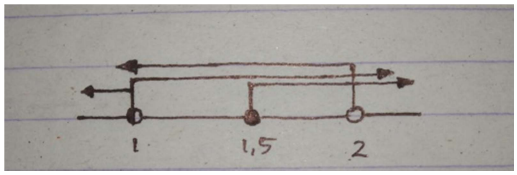
$2x^2 - 5x + 3 \geq \quad 0 \quad > x^2 - 3x + 2$

$(2x - 3)(x - 1) \geq \quad 0 \quad > (x - 1)(x - 2)$

$2x - 3 = 0 \qquad\qquad x = 1$

$x = \frac{3}{2} = 1{,}5 \qquad\qquad x = 2$

$x = 1$



$jadi, hp = \left\{\frac{3}{2} < x < 2\right\}$

2A B. $x(x^2+1)(2-x-x^2>0$

$x(x^2+1)>0$

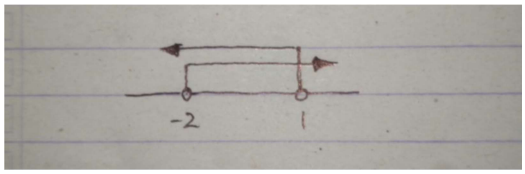
$x^3+x>0$

$2-x-x^2>0$

$x^2+x-2<0$

$(x+2)(x-1)<0$

$x=-2\ atau\ x=1$



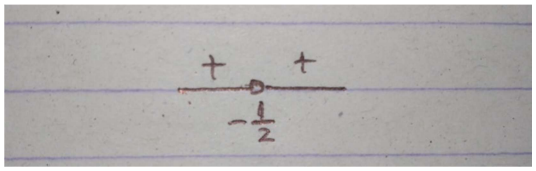
$jadi, hp=\{-2<x<1\}$

2A C. $(2x+1)^2(x^2-5x+6)<0$

$(2x+1)^2<0$

$(2x+1)(2x+1)<0$

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

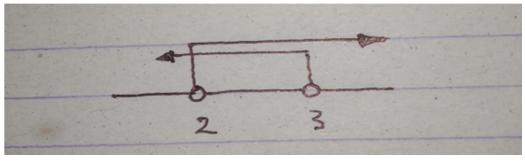


$x\in\emptyset$

$x^2-5x+6<0$

$(x-2)(x-3)<0$

$x=2\ atau\ x=3$



$jadi, hp=\{2<x<3\}$

2B. TENTUKAN HIMPUNAN PENYELESAIAN DARI PERTIDAKSAMAAN BERIKUT:

2B A. $|\frac{2x-1}{x+5}| \leq 3$

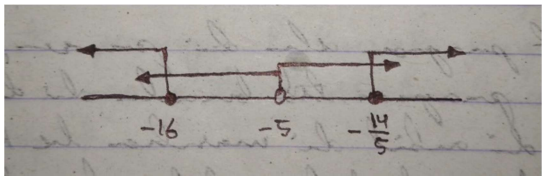
$$\frac{2x-1}{x+5} - \frac{3(x+5)}{x+5} \leq 0 \; atau \; \frac{2x-1}{x+5} + (\frac{3(x+5)}{x+5} \geq 0$$

$$\frac{2x-1-3x-15}{x+5} \leq 0 \; \; atau \frac{2x-1+3x+15}{x+5} \geq 0$$

$$\frac{-x-16}{x+5} \leq 0 \; atau \frac{5x+14}{x+5} \geq 0$$

$x = -16$ $\qquad$ $x = -\frac{14}{5}$

$x = -5$ $\qquad$ $x = -5$



$$jadi, hp = \left\{x \leq -16 \; atau \; x \geq -\frac{14}{5}\right\}$$

2B B. $|x+3| < \sqrt{9-x^2}$

$$(x+3)^2 < 9 - x^2$$

$$x^2 + 6x + 9 < 9 - x^2$$

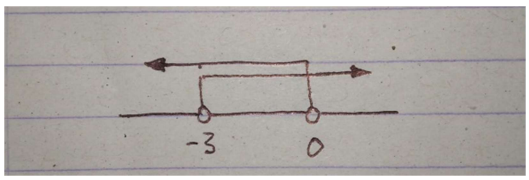
$$x^2 + x^2 + 6x + 9 - 9 < 0$$

$$2x^2 + 6x < 0$$

$$x^2 + 3x < 0$$

$$x(x+3) < 0$$

$x = 0 \; dan \; x = -3$



$$jadi, hp = \{-3 < x < 0\}$$

2C A. TENTUKAN PERSAMAAN KUADRAT JIKA DIKETAHUI AKAR-AKARNYA ADALAH 3 DAN 0!

$x_1 = 3, \quad x_2 = 0$

$x_1 + x_2 = 3 + 0$

$= 3$

$x_1 . x_2 = (3)(0)$

$= 0$

$persamaan\ kuadrat, x^2 - (x_1 + x_2)x + x_1 . x_2 = 0$

$x^2 - 3x + 0 = 0$

$x^2 - 3x = 0$

2C B. JUMLAH BILANGAN CACAH ADALAH 12. JIKA HASIL KALI DUA BILANGAN ITU 35. TENTUKAN KEDUA BILANGAN CACAH YANG DIMAKSUD!

$x_1 + x_2 = 12$

$x_1 = 12 - x_2$

$x_1 . x_2 = 35$

$(12 - x)x = 35$

$12x - x^2 = 35$

$-x^2 + 12x - 35 = 0$

$x^2 - 12x + 35 = 0$

$(x - 5)(x - 7) = 0$

$x_1 = 5\ dan\ x_2 = 7$

Jadi, kedua bilangan tersebut adalah 5 dan 7.

3. SELESAIKANLAH,

3A. $\sqrt{x^2 - 5x - 6} < \sqrt{x^2 - 3x + 2}$

$x^2 - 5x - 6 < x^2 - 3x + 2$

$x^2 - 5x - 6 - x^2 + 3x - 2 < 0$

$-2x - 8 < 0$

$$-8 < 2x$$

$$2x > -8$$

$$x > -4$$

$x^2 - 5x - 6 \geq 0$

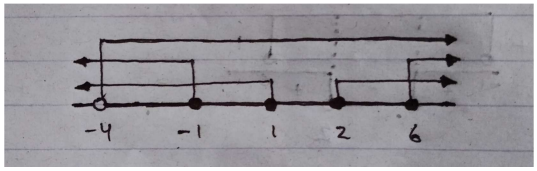
$(x + 1)(x - 6) \geq 0$

$x = -1 \; dan \; x = 6$

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

$(x - 1)(x - 2) \geq 0$

$x = 1 \;\; dan \; x = 2$



$hp = \{-4 < x < -1 \; atau \; x \geq 6\}$

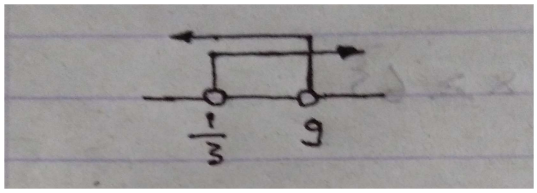
3B. $|2x - 5| < |x + 4|$

$2x - 5 < x - 4$

$(2x - 5 - x - 4)(2x - 5 + x + 4) < 0$

$(x - 9)(3x - 1) < 0$

$x = 9 \; dan \; x = \frac{1}{3}$



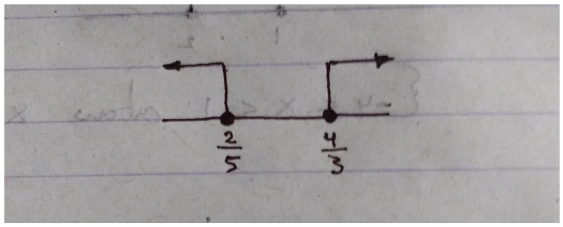
$hp = \left\{\frac{1}{3} < x < 9\right\}$

3C. $|4x - 3| \geq x + 1$

$4x - 3 - x - 1 \geq 0 \;\; atau \; 4x - 3 + x + 1 \leq 0$

$3x - 4 \geq 0 \;\; atau \qquad 5x - 2 \leq 0$

$$x \geq \frac{4}{3} \ atau \qquad\qquad x \leq \frac{2}{5}$$



$$hp = \left\{x \leq \frac{2}{5} \ atau \ x \geq \frac{4}{3}\right\}$$

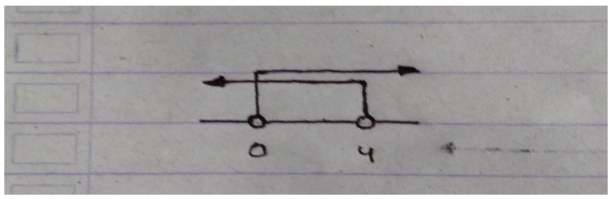
3D. $|x-2|2-|x-2|<2$

$|2x-4|-|x-2|<2 \ atau \ |2x-4|-|x-2|>-2$

$2x-4-x+2<2$ $\qquad$ $2x-4-x+2>-2$

$x-2<2$ $\qquad$ $x-2>-2$

$x<4$ $\qquad$ $x>0$



$hp = \{0 < x < 4\}$