Azzahra R.A J3C119027 INF IN.PRK2

No.

Date

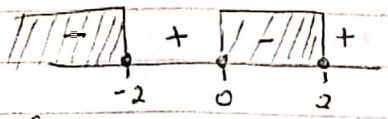
Kertas

Latihan 6

1. $x^3 - 4x \leq 0$

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

$x = 0 \; ; \; x = 2 \; ; \; x = -2$



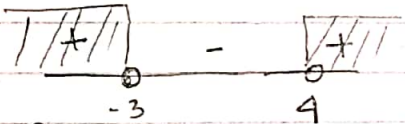
HP = { x | $x \leq -2$ atau $0 \leq x \leq 2$ }

= $(-\infty, -2]$ atau $[0, 2]$

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

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

$x = 4 \quad x = -3$



HP = { x | $x < -3$ atau $x > 4$ }

= $(-\infty, -3)$ atau $(4, \infty)$

3. $1 - x^2 \leq 2x - 14$

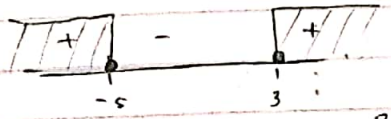
$1 - x^2 - 2x + 14 \leq 0$

$-x^2 - 2x + 15 \leq 0$

$x^2 + 2x - 15 \geq 0$

$(x+5)(x-3)$

$x = -5 \quad x = 3$



HP = { x | $x \leq -5$ atau $x \geq 3$ }

= $(-\infty, -5]$ atau $[3, \infty)$

4. $3x - 1 < 5 \leq x + 10$

$3x - 1 < 5$ dan $5 \leq x + 10$

$3x < 6$ $\quad -5 \leq x$

$x < 2$

HP = { x | $-5 \leq x < 2$ } = $[-5, 2)$

5. $2x + 1 \leq x - 2 < 1 + x$

$2x + 1 \leq x - 2$ dan $x - 2 < 1 + x$

$x \leq -3$ dan $0 < 3$ (benar)

$x \in R$

HP = { x | $x \leq -3$; $x \in R$ } = $(-\infty, -3]$

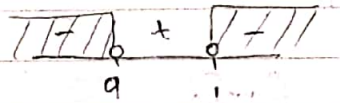
6. $\frac{1}{x} < 1$

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

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

$x = 1 \; ; \; x = 0$

$x \neq 0$



HP = { x | $x < 0$ atau $x > 1$ }

= $(-\infty, 0)$ atau $(1, \infty)$

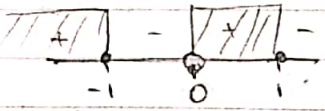
7. $\frac{1}{x} \geq x$

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

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

$x = -1 \; ; \; x = 1 \; ; \; x = 0$

$x \neq 0$



HP = { x | $x \leq -1$ atau $0 < x \leq 1$ }

= $(-\infty, -1]$ atau $(0, 1]$

8. $\frac{(x-1)(x+2)^3}{(3-x)^2} \leq 0$

$x = 1 \; ; \; x = -2 \; ; \; x = 3 \rightarrow x \neq 3$

HP = { $-2 \leq x \leq 1$ } = $[-2, 1]$

9. $\frac{x^2 - 1}{x} \geq x$

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

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

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

$x = 0 \; ; x \neq 0$

+	//	−
	0	

Hp = $\{x \mid x < 0\} = (-\infty, 0)$

10. $T°C = \frac{4}{5} T°R$

Ca = −10°C ; Cb = 20°C

R ?

$\frac{4}{5} \cdot C \leq \frac{4}{5} \cdot C \leq \frac{4}{5} \cdot C$

$\frac{4}{5} \cdot (-10) \leq \frac{4}{5} \cdot C \leq \frac{4}{5} \cdot (20)$

$-8 \leq \frac{4}{5} \cdot C \leq 16$

11. V = 200

$P_a = 440$; $P_b = 5500$

I = ?

$P = V \times I$

$\frac{P}{V} \leq \frac{P}{V} \leq \frac{P}{V}$

$\frac{440}{220} \leq \frac{P}{220} \leq \frac{5500}{220}$

$2 \leq \frac{P}{220} \leq 25$

12. $L \geq 900$

$\Leftrightarrow S \times S \geq 900$

$S^2 \geq 1.900$

$S^2 - 900 \geq 0$

$(S - 30)(S + 30)$

$S = 30 \quad S = -30$

Hp = $\{x \mid x \geq 30\} = [30, \infty)$

13. $15 - 3t^2 \geq 3$

$15 - 3t^2 \geq 3$

$15 - 3t^2 - 3 \geq 0 : 3$

$5 - t^2 - 1 \geq 0$

$t^2 - 4 \leq 0$

$(t + 2)(t - 2)$

$t = -2 \quad t = 2$

bTM, karena waktu $\neq < 0$

+	//	−	//	+
	−2		2	

Namun, karena waktu tdk boleh − (minus) maka

//	//
−2	0 2

Sehingga Hp = $\{x \mid 0 \leq x \leq 2\}$ = $[0, 2]$

14. $\frac{1}{R_1} + \frac{1}{R_2} = \frac{1}{R}$

$R_1 = x \quad R_2 = 6 \quad R \geq 3$

$\rightarrow \frac{1}{R_1} + \frac{1}{R_2} \geq \frac{1}{R}$

$\frac{1}{R_1} + \frac{1}{6} \geq \frac{1}{3}$

$\frac{1}{R_1} \geq \frac{1}{3} - \frac{1}{6}$

$\frac{1}{R_1} \geq \frac{2-1}{6}$

$\frac{1}{R_1} \geq \frac{1}{6}$

$R_1 \geq 6$

Hp $\{x \mid x \geq 6\} = [6, \infty)$

Azzahra R.A J3C119027

No.

Date

Pert-9

1s. a. $f(x) = 3x+1$

$DF = \{x \mid x \in \mathbb{R}\}$

$WF = \{x \mid x \in \mathbb{R}\}$

b. $g(x) = x^2 - 2x + 1$

$Df = \{x \mid x \in \mathbb{R}\}$

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

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

$Wf = \{x \mid x \in \mathbb{R}, x \geq 2\}$

c. $h(x) = \dfrac{2x-1}{3x+1}$

$3x+1 \neq 0$ $\quad Df = \{x \mid x \neq -1/3, x \in \mathbb{R}\}$

$3x \neq -1$

$x \neq -1/3$

$h(x)^{-1} = \dfrac{-x-1}{3x-2}$

$3x - 2 \neq 0$ $\quad Wf = \{x \mid x \neq 2/3, x \in \mathbb{R}\}$

$3x \neq 2$

$x \neq 2/3$

d. $f(x) = 1 - 2\sin x$

$df = \{x \mid x \in \mathbb{R}\}$

$-1 \leq \sin x \leq 1$

$-1 \leq \sin x \leq 1 \quad \times 2$

$-2 \leq \sin x \leq 2 \quad \times -1$

$2 \geq -2\sin x \geq 2 \quad +1$

$2+1 \geq 1 - 2\sin x \geq 2+1$

$3 \geq 1 - 2\sin x \geq -1$

$-1 \leq 1 - 2\sin x \leq 3$

$Wf = \{x \mid -1 \leq x \leq 3\} = [-1, 3]$

E. $g(x) = 1 + 2\sqrt{1-x^2}$

$df = \{x \mid x \in \mathbb{R}, 1 - x^2 \geq 0\}$

$\{x \mid x \in \mathbb{R}; (1-x)(1+x) \geq 0\}$

$\{x \mid x \in \mathbb{R}; -1 \leq x \leq 1\}$

$Df = [-1, 1]$

$1 - x^2 \geq 0$

$\sqrt{1-x^2} \geq 0$

$Wf = \{x \mid x \in \mathbb{R}; x \geq 0\}$

$= [x, \infty)$