Latihan 3

1. $2x^2 + mx + 16 = 0$

dari persamaan kuadrat tsb. kita dapat :

$a = 2$

$b = m$

$c = 16$

ingat, kdr akar $\frac{2}{}$ dr p.ers tsb adl α dan β dgn $\alpha = 2\beta$ maka berlaku :

$\Rightarrow \alpha . \beta = \frac{c}{a} \quad <=> \quad 2\beta . \beta = \frac{16}{2}$

$\beta^2 = 4$

$\beta = \pm 2$

krn akar $\frac{2}{}$ nya positif berarti :

$\beta = 2$ (M)

$\beta = -2$ (TM) X

$\Rightarrow \alpha + \beta = -\frac{b}{a}$

$2\beta + \beta = \frac{-m}{2} \quad <=> \quad m = -6\beta$

$= -12$

2. $x^2 + (a-1)x + 2 = 0$

akar $\frac{2}{}$ adl α dan β, $\alpha = 2\beta$, $a > 0$

koef dr pers kuadrat :

$a^* = 1$

$b = a - 1$

$c = 2$

krn α dan β adalah akar $\frac{2}{}$ dr pers. tsb. mk :

$\Rightarrow \alpha . \beta = \frac{c}{a^*} \quad <=> \quad 2\beta^2 = 2$

$\beta^2 = 1$

$\beta = \pm 1$

$\Rightarrow \alpha + \beta = -\frac{b}{a^*} \quad <=> \quad 3\beta = 1 - a$

$a = 1 - 3\beta$.

$\beta = 1 \longrightarrow a = -2$ (TM)

$\beta = -1 \longrightarrow a = 4$ (M) V

3. $3x^2 + 5x + 1 = 0$

Akar $\frac{2}{}$ nya adl α dan β.

mk :

$\frac{1}{\alpha^2} + \frac{1}{\beta^2} = \frac{\beta^2 + \alpha^2}{(\alpha\beta)^2}$

$= \frac{(\alpha+\beta)^2 - 2\alpha\beta}{(\alpha\beta)^2}$

krn $\alpha . \beta = \frac{c}{a} = \frac{1}{3}$

$\alpha + \beta = \frac{-b}{a} = \frac{-5}{3}$

shg :

$\frac{1}{\alpha^2} + \frac{1}{\beta^2} = \frac{(-5/3)^2 - 2 . 1/3}{(1/3)^2}$

$= \frac{25/9 - 6/9}{1/9}$

$= 19$

4. $(k+2)x^2 - (2k-1)x + (k-1) = 0$

mpy akar real kembar, mk :

$D = 0$

$b^2 - 4ac = 0$

$(-(2k-1))^2 - 4 . (k+2)(k-1) = 0$

$<=> 4k^2 - 4k + 1 - 4k^2 - 4k + 8 = 0$

$<=> \quad 9 - 8k = 0$

$k = 9/8$

shg :

$(\frac{9}{8} + 2)x^2 - (2 . \frac{9}{8} - 1)x + (\frac{9}{8} - 1) = 0$

$\frac{25}{8}x^2 - \frac{10}{8}x + \frac{1}{8} = 0$

$<=> \quad 25x^2 - 10x + 1 = 0$

Jml kedua akar persamaan ini adl $-\frac{b}{a} = \frac{-(-10)}{25}$

$= 2/5$ //