kalkulus

Date :

① $F(x) = -x^2 + 1$; $a = -1$ $b = 0$ $c = 1$

$D = b^2 - 4.a.c$

$= 0 - 4.(-1).1 = 0 - (-4)$

$= 0 + 4 = 4$

$D > 0$ (memotong sumbu X)

⇒ Titik puncak $= \left(\frac{-b}{2a}, -\frac{D}{4a} \right) = \left(-\frac{0}{2.-1}, \frac{-4}{4.-1} \right) = (0,1)$

⇒ Titik potong sumbu X

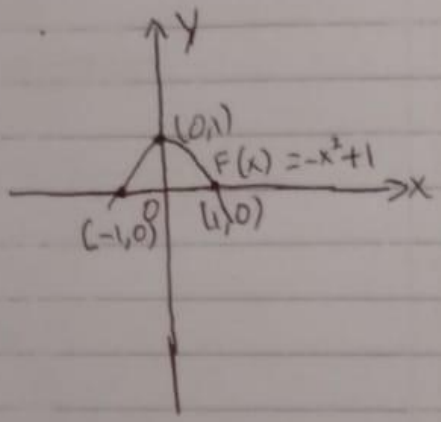
$-x^2 + 1 = 0$

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

$x_1 = 1 \vee x_2 = -1$

↓ ↓

$(1,0)$ $(-1,0)$



② $F(x) = 2x - x2$; $a = -1$ $b = 2$ $c = 0$

$D = b^2 - 4.a.c$

$= 4 - 4.-1.0 = 4 - 0$

$= 4$

$D > 0$ (memotong sumbu X)

⇒ Titik puncak $= \left(-\frac{b}{2a}, -\frac{D}{4a} \right) = \left(-\frac{2}{-2}, -\frac{4}{-4} \right) = (1,1)$

⇒ Titik potong sumbu X

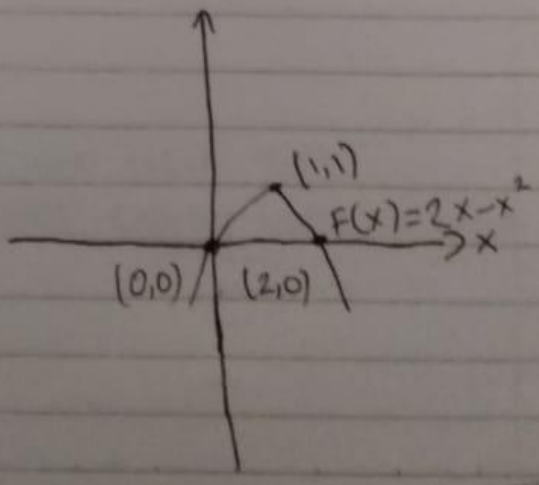
$-x^2 + 2x = 0$

$x(-x+2) = 0$

$x_1 = 0 \vee x_2 = 2$

↓ ↓

$(0,0)$ $(2,0)$



Date :

③ $F(x) = x^2 - 4x + 5$; $a=1$ $b=-4$ $c=5$

$D = b^2 - 4.a.c$

$= 16 - 4.1.5 = 16 - 20$

$= -4$

$D<0$ (Tidak memotong X atau melayang)

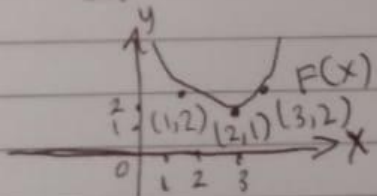
$\Rightarrow$ Titik Puncak $= \left(-\frac{b}{2a}, -\frac{D}{4a}\right) = \left(\frac{4}{2}, \frac{4}{4}\right) = (2,1)$

$\Rightarrow X_1 = \frac{-b}{2a} + m = 2+1 = 3$ | $y_1 = x^2 - 4.x + 5$

$= 3^2 - 4.3 + 5 = 9 - 12 + 5 = 2 \rightarrow (3,2)$

$\Rightarrow X_2 = \frac{-b}{2a} - m = 2-1 = 1$ | $y_2 = x^2 - 4x + 5$

$= 1 - 4 + 5 = 2 \rightarrow (1,2)$



④ $F(x) = -x^2 + 2x - 2$; $a=-1$ $b=2$ $c=-2$

$D = b^2 - 4.a.c$

$= 4 - 4.(-1).(-2) = 4 - 8$

$= -4$

$D<0$ (melayang)

$\Rightarrow$ Titik Puncak $= \left(-\frac{b}{2a}, -\frac{D}{4a}\right) = \left(-\frac{2}{-2}, \frac{4}{-4}\right) = (1,-1)$

$\Rightarrow X_1 = \frac{-b}{2a} + m = 1+1 = 2$ | $y_1 = -x^2 + 2x - 2$

$= -(2^2) + 2.2 = -4 + 4 - 2 = -2 \rightarrow (2,-2)$

$\Rightarrow X_2 = \frac{-b}{2a} - m = 1-1 = 0$ | $y_2 = -0^2 + 2.0 - 2$

$= 0 + (-2) = -2 \rightarrow (0,-2)$

$A = (0,-2)$ $C = (2,-2)$

$B = (1,-1)$