Latsol Tutor KE-2

11/09/21

1. Tanpa menggunakan aplikasi graphing.

$$y = \frac{4x^4 - 10x^3 - 4x^2}{2x^2}$$

$x \neq 0$

$$y = \frac{4x^4 - 10x^3 - 4x^2}{2x^2} = 2x^2 - 5x - 2$$

Titik puncak

$y' = 0$

$0 = 4x - 5$

$5 = 4x$

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

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

$y = 2 \cdot \frac{25}{16} - 5 \cdot \frac{5}{4} - 2$

$= \frac{25}{8} - \frac{50}{8} - \frac{16}{8}$

$= -\frac{41}{8}$

TP → $TP\left(\frac{5}{4}, -\frac{41}{8}\right)$

$y = 0$

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

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

$x = \frac{5 \pm \sqrt{25 + 16}}{4}$ (real)

Bentuk grafik terbuka keatas. Memotong sumbu x di dua titik.

2. dy/dx dari

$$2x^3 + 4y^3 - 8xy = 0$$

$$2x^3 \frac{d}{dx} + 4y^3 \frac{d}{dy} \cdot \frac{dy}{dx} - 8x\left(y \frac{d}{dy} + 8xy \frac{d}{dy} \cdot \frac{dy}{dx}\right)$$

$$= 0$$

$$6x^2 + 12y^2 \frac{dy}{dx} - \left(8y + 8x \frac{dy}{dx}\right) = 0$$

$$6x^2 - 8y + (12y^2 - 8y) \frac{dy}{dx} = 0$$

$$\frac{dy}{dx} = \frac{6x^2 - 8y}{-12y^2 + 8y}$$

$$= \frac{3x^2 - 4y}{-6y^2 + 4y}$$

3. Biaya per x hari

$f(x) = 2x - 120 + 50/x$

$f'(x) = 0$

$0 = 2 - \frac{50}{x^2}$

$0 = 2x^2 - 50$

$25 = x^2$

$\pm 5 = x$

$x = 5$

$f(5) = 2.5 - 120 + 50/5$

$= 10 - 120 + 10$

$= -100$

dalam 5 hari