

Nugraha Adhitama
XI IPA 3

$$: y = 5$$

1.) Dik : $y = x^3 - 3x^2 + 5x - 10$ Jawab :

Dit : pbs ?

$$y' = 3(3)^2 - 6(3) + 5$$
$$= 27 - 18 + 5$$

$$m = y' = 14$$

pbs : $y - y_1 = m(x - x_1)$

$$y - 5 = 14(x - 3)$$

$$y = 14x - 37$$

$$y' = 3x^2 - 6x + 5 \quad \dots (1)$$

$$y = x^3 - 3x^2 + 5x - 10$$

$$5 = x^3 - 3x^2 + 5x - 10$$

$$0 = x^3 - 3x^2 + 5x - 15$$

$$0 = (x - 3)(x^2 + 5)$$

$$x = 3 \rightarrow \text{masukkan ke persamaan (1)}$$

$$2.) m = y' = 2x + 10$$

$$m = y' = 2(1) + 10$$

$$m = y' = 12$$

$$y = x^2 + 10x + 7$$

$$y = (1)^2 + 10(1) + 7$$

$$y = 18$$

titik singgung (1, 18)

$$y - y_1 = m(x - x_1)$$

$$y - 18 = 12(x - 1)$$

$$y = 12x + 6$$

$$m = y' = 3ax^2 + b$$

$$12 = 3ax^2 + b$$

$$y = 12x + 6$$

$$y = 12(4) + 6$$

$$y = 54$$

titik singgung = (4, 54)

$$y = ax^3 + b$$

$$54 = a(4)^3 + b$$

$$54 = 64a + b \quad \dots (2)$$

$$12 = 3a(4)^2 + b$$

$$12 = 48a + b \quad \dots (1)$$

eliminasi persamaan (1) & (2)

$$54 = 64a + b$$

$$12 = 48a + b \quad -$$

$$42 = 16a$$

$$\frac{42}{16} = a$$

$$\frac{21}{8} = a$$

$$12 = 48\left(\frac{21}{8}\right) + b$$

$$12 = 126 + b$$

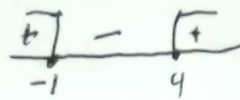
$$-114 = b$$

$$3.) f(u) = \frac{1}{3}u^3 - \frac{3}{2}u^2 - 4u + 5$$

$$f'(u) = u^2 - 3u - 4$$

$$(u-4)(u+1)$$

$$u=4 \quad u=-1$$



Titik uji coba : 0

$$0^2 - 3(0) - 4 = -4$$

•> fungsi naik $\rightarrow u < -1$ atau $u > 4$

•> fungsi turun $\rightarrow -1 < u < 4$

$$4.) f(u) = 2u^3 - 9u^2 + 12u$$

$$f'(u) = 6u^2 - 18u + 12$$

$$= u^2 - 3u + 2$$

$$(u-1)(u-2)$$

$$u=1 \quad u=2$$

$$\bullet \rightarrow u=1 \rightarrow 2(1)^3 - 9(1)^2 + 12(1)$$

$$2 - 9 + 12 = 5 \quad (1, 5)$$

$$\bullet \rightarrow u=2 \rightarrow 2(2)^3 - 9(2)^2 + 12(2)$$

$$16 - 36 + 24 = 4 \quad (2, 4)$$

$$5.) f(u) = au^3 + bu^2 \quad \text{titik } (1, -1)$$

dik : a & b ?

$$y = au^3 + bu^2$$

$$-1 = a(1)^3 + b(1)^2$$

$$-1 = a + b$$

$$-1 = \frac{-2b}{3} + b$$

$$-3 = -2b + 3b$$

$$-3 = b$$

~~$$a = -2(-3)$$~~

$$-1 = a - 3$$

$$a = 2$$

$$y' = 3au^2 + 2bu$$

$$y' = 3a(1)^2 + 2b(1)$$

$$0 = 3a + 2b$$

$$-2b = 3a$$

$$a = \frac{-2b}{3}$$