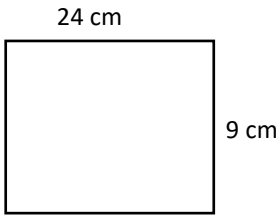
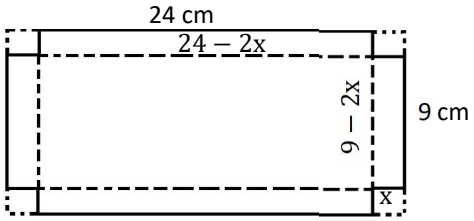
1. Berapa potongan agar volume maxs? Dengan menggunakan turunan



2. Ada kawat panjangnya 36 m kawat itu akan memagari sesuatu daerah persegi, berapa luas maksimal daerah yang bisa dipagari?

Jawaban

1.



$V = \rho . \ell . \tau$

$V = (24 - 2x).(9 - 2x).x$

$V = (216 - 48x - 18x + 4x^2).x$

$V = (216 - 66x + 4x^2).x$

$V = 216x - 66x^2 + 4x^3$

$\frac{dy}{dx} = a.nx^{n-1}$

$V' = 216 . 1x^{1-1} - 66 . 2x^{2-1} + 4.3x^{3-1}$

$V' = 216x^0 - 132x^1 + 12x^2$

Turunan 1

$V' = 216 - 132x + 12x^2$

$V' = 216 - 132x + 12x^2 : 12$

Turunan 2

$V' = 18 - 11x + x^2 = 0$

$V' = x^2 - 11x + 18 = 0$

$V' = (x - 9)(x - 2) = 0$

$x = 9$ $x = 2$

Untuk menghitung volume diambil

X=2

Jika x=9 lebarnya akan habis dipotong

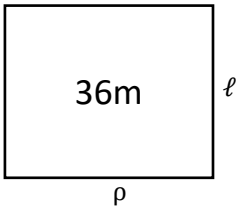
Volume maxs

$V = 216x - 66x^2 + 4x^3$

$V = 216. 2 - 66. 2^2 + 4. 2^3$

$V = 432 - 264 + 32$

2.



$\text{keliling} = 36\text{m}$
$2(\rho + \ell) = 36$
$\rho + \ell = \frac{36}{2}$
$\rho + \ell = 18\text{m}$
$\ell = 18 - \rho$

Cari panjang
$\text{luas} = \rho . \ell$
$\text{luas} = \rho . (18 - \rho)$
$L(\rho) = 18\rho - \rho^2$
$\frac{dy}{dx} = a . nx^{n-1}$
$L' = 18 . 1p^{1-1} - 1 . 2\rho^{2-1}$
$= 18\rho^0 - 2\rho^1$
Turunan 1
$L' = 18 - 2\rho$
$L' = 18 - 2\rho : 2$
Turunan 2
$L' = 9 - \rho$
$0 = 9 - \rho$
$\rho = 9$

Cari lebar
$\ell = 18 - \rho$
$\ell = 18 - 9$
$\ell = 9$

Luas maxs

$\text{Luas} = \ell \times \rho$
$\text{Luas} = 9 \times 9$
$\text{Luas} = 81\text{m}^2$