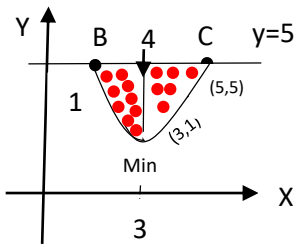


Two lines and Parabola



The Left side we have to use integration

The line $y = 5$ meets

$$\left. \begin{array}{l} y = 1 + (x-3)^2 \\ y = 5 \end{array} \right\} \Rightarrow \begin{array}{l} (x-3)^2 = 4 \\ x-3 = \pm 2 \\ x = 3 - 2 = 1 \quad B(1, 5) \end{array}$$

$$\begin{aligned} \int_1^3 [5 - 1 - (x-3)^2] dx &= \int_1^3 [4 - (x^2 - 6x + 9)] dx = \\ &= \int_1^3 (-x^2 + 6x - 5) dx = \left[-\frac{x^3}{3} + 3x^2 - 5x \right]_1^3 \\ &= (-9 + 27 - 15) - \left(-\frac{1}{3} + 3 - 5 \right) = 3 + 2\frac{1}{3} = 5\frac{1}{3} \end{aligned}$$

The area of triangle is $\frac{4 \cdot 2}{2} = 4$

Total $5\frac{1}{3} + 4 = 9\frac{1}{3}$

$5 - 1 = 4$

