Que 5:

The area (in square units) bounded by the curves $y = \sqrt{x}$, $2y - x + 3 = 0$, x-axis, and lying in the first quadrant is :

[Main 2013]

(a) 9
(b) 36
(c) 18
(d) $\frac{27}{4}$

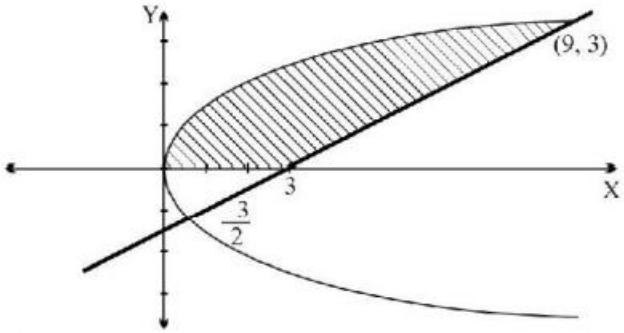
solution:

(a) Given curves are

$y = \sqrt{x}$ ... (i)

and $2y - x + 3 = 0$ ... (ii)

On solving both we get $y = -1, 3$



$$\text{Required area} = \int_0^3 \left\{(2y+3) - y^2\right\} dy$$

$$= \left[y^2 + 3y - \frac{y^3}{3}\right]_0^3 = 9.$$