

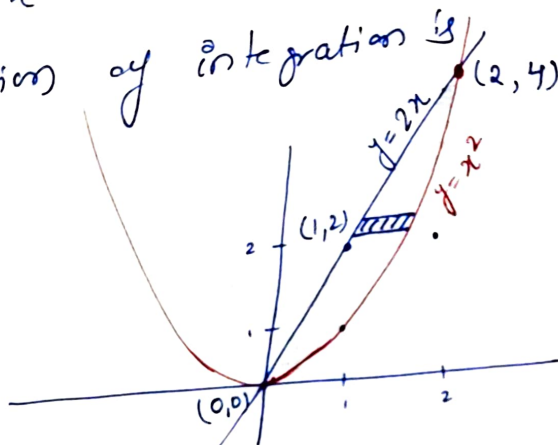
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$$\int_0^2 \int_{x^2}^{2x} (4x+2) dy dx$$

given $y = x^2$ and $y = 2x$

also, $x = 0$ to $x = 2$

So, region of integration is



Note

There will be points of intersection of these two curves.

To find them equate both eq.

$$y = x^2 \text{ \& } y = 2x$$

$$\Rightarrow x^2 = 2x$$

$$\Rightarrow x^2 - 2x = 0 \Rightarrow x(x-2) = 0$$

$$\Rightarrow x = 0 \text{ \& } x = 2$$

$$\Rightarrow y = 0 \text{ \& } y = 4$$

So point of intersections will be $(0,0)$ & $(2,4)$

So to change the order of integration, draw strip \parallel to y axis-

$$\int_0^2 \int_{x^2}^{2x} (4x+2) dy dx = \int_0^4 \int_{y/2}^{\sqrt{y}} (4x+2) dx dy$$