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## Differentiation - The natural log function $\ln(x)$

$$y = A \ln x$$
$$\frac{dy}{dx} = \frac{A}{x}$$

$$y = 2 + \ln x$$
$$\frac{dy}{dx} = \frac{1}{x}$$

$$y = 5 - 2 \ln x$$
$$\frac{dy}{dx} = -\frac{2}{x}$$

$$s = \frac{2 \ln t}{3} = \frac{2}{3} \ln t$$
$$\frac{ds}{dt} = \frac{2}{3} \left( \frac{1}{t} \right) = \frac{2}{3t}$$

Find the coordinates of the stationary point on the curve  $y = \frac{3}{4}x - \frac{3 \ln x}{4}$

$$y = \frac{3}{4}x - \frac{3}{4} \ln x$$

$$\therefore \frac{dy}{dx} = \frac{3}{4} - \frac{3}{4x}$$

$$\text{At stat. pt. } \frac{dy}{dx} = 0$$

$$\therefore \frac{3}{4} - \frac{3}{4x} = 0$$

$$\therefore 3x - 3 = 0$$

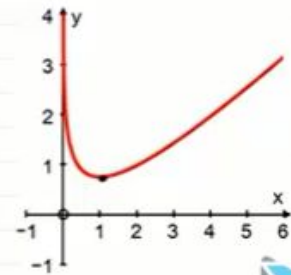
$$\therefore x = 1$$

$$\therefore \text{when } x = 1$$

$$y = \frac{3}{4} - \frac{3}{4} \ln 1$$

$$\therefore y = \frac{3}{4}$$

$$\therefore \text{stationary pt. } (1, \frac{3}{4})$$



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