Integration

$$\frac{dy}{dx} = x^5 \xrightarrow{\text{Integrate}} y = \frac{x^6}{6} + c$$

add one to the power
divide by the <u>new</u> power

Find the Constant

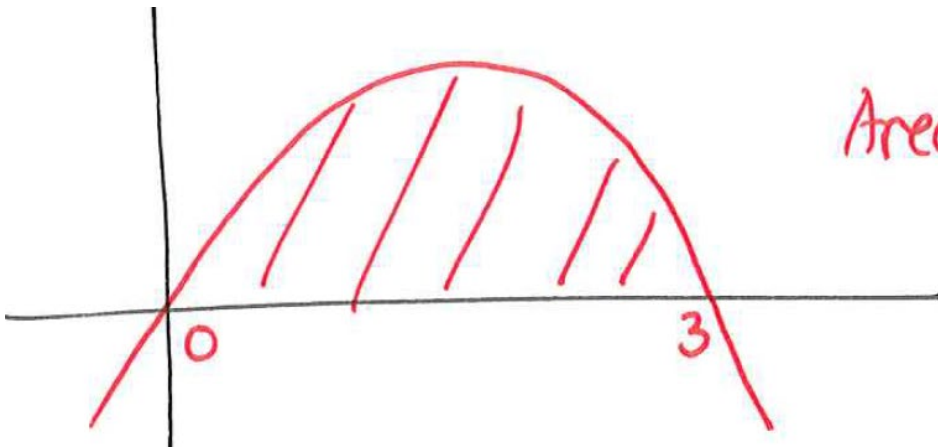To find the constant you need a co-ordinate that the curve passes through.

Notation

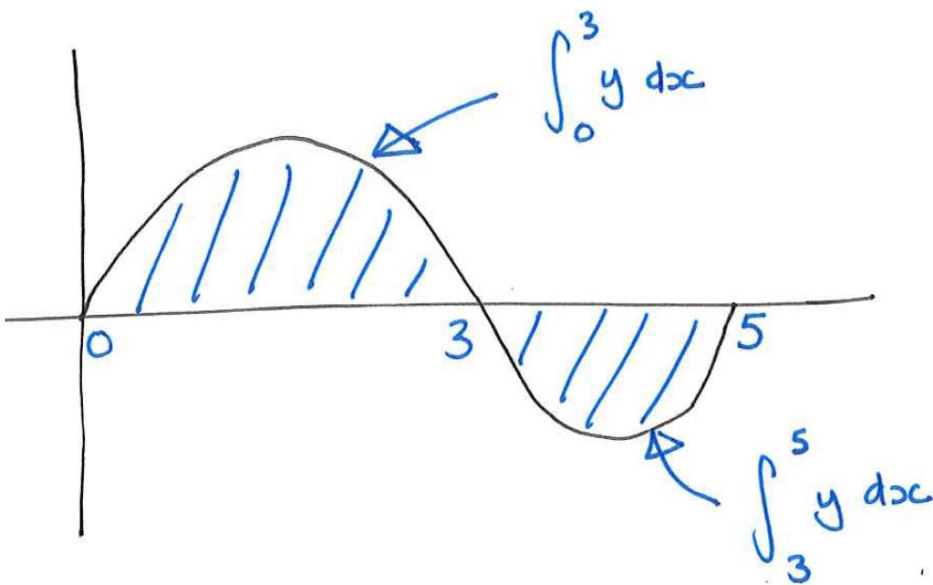$$\int x^3 \, dx = \frac{x^4}{4} + c$$

Limits

$$\int_1^2 3x^2 \, dx = \left[x^3 \right]_1^2$$

$$= (2^3) - (1^3)$$
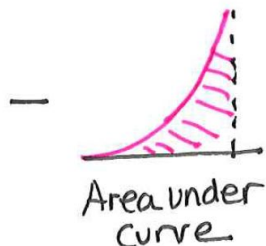
$$= 8 - 1$$

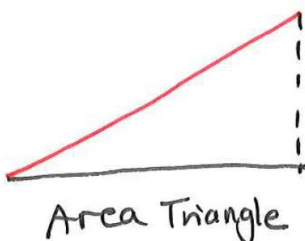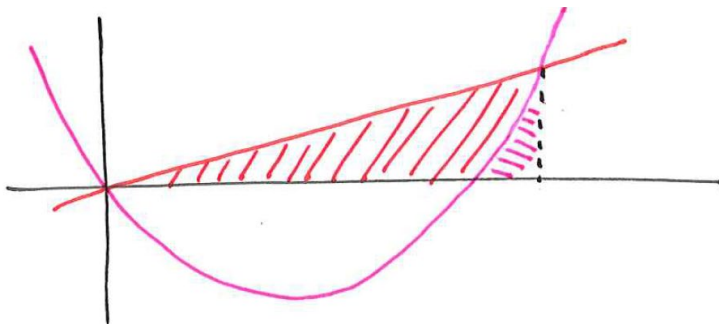$$= 7$$

Area Under a Graph

$$\text{Area} = \int_{0}^{3} y \, dx$$

$$\int_{0}^{3} y \, dx$$

$$\int_{3}^{5} y \, dx$$

(Note: answer will be negative because below x axis. Just ignore the negative.)

Area Triangle   −   Area under curve   =   Red Area