$f(x)$

$g(x)$

$A = \int_a^b f(x) - g(x)\ dx$

Remember to change sign to + if area is below axis.

Remember to work out separately the area above and below the x-axis.

Area between 2 curves

Integration is the process of finding the AREA under a curve and the x-axis

Finding where curve and line intersect $f(x)=g(x)$ gives the limits a and b

Integration of Polynomials

$I = \int x^{\frac{1}{2}}(2x-1)dx$

$I = \int \left(2x^{\frac{3}{2}} - x^{\frac{1}{2}}\right)dx$

$I = \frac{4}{5}x^{\frac{5}{2}} - \frac{2}{3}x^{\frac{3}{2}} + C$

IF $f'(x) = ax^n$

Then $I = f(x) = \dfrac{ax^{n+1}}{n+1}$

$I = \int_1^2 \dfrac{1}{2\sqrt{x}}dx$

$I = \int_1^2 \dfrac{x^{-\frac{1}{2}}}{2}dx$

$I = \left[x^{\frac{1}{2}} \right]_1^2$

$= \sqrt{2} - 1$