What are indefinite integrals?

- Anti-differentiation (the reverse of differentiation) to achieve an antiderivative/ primitive function
- An integral without upper or lower bounds and gives a function
- As there are no limits, the constant of integration ($+C$) is added to account for the constant that is lost when differentiating

$$\int f(x)dx$$

STANDARD FORMS

$$\int x^n dx = \frac{x^{n+1}}{n+1} + c \qquad \int (ax+b)^n dx = \frac{(ax+b)^{n+1}}{a(n+1)} + c$$

Note: $n \neq -1$

What are definite integrals?

- An integral with bounds and gives a number
- It can represent the area under the curve or volume of a solid

$$\int_b^a f(x)dx$$

STANDARD FORMS

$$\int_a^b f(x)dx = [F(x)]_a^b = F(b) - F(a)$$

2.1 WORKED EXAMPLE

What is the answer to:

$$\int f'(x)d/dx$$

Why are the others incorrect?

1. $f(x)$
2. $f(x) + c$
3. $f(x)d/dx$
4. $\int f(x)$

2.2 WORKED EXAMPLE

Using the given standard forms integrate

1. $\int x^4 dx$
2. $\int x^3 + 1 dx$
3. $\int 3x^4 dx$