## **Examples:**

- 1. The antiderivative of 8x cubed is 2x to the fourth plus c.
- 2. The antiderivative of 5x to the sixth power is (5/7)x to the seventh power plus c.
- The antiderivative of 3x minus 1 squared dx is 3x cubed over 3 -3x squared + x + c, which simplifies to x cubed - x squared + x + c.
- 4. The antiderivative of 2x plus 1 times x minus 2 dx is 2x cubed over
  3 3x squared over 2 2x + c.
- 5. The antiderivative of 1 over x squared dx is -1 over x + c.
- 6. The antiderivative of 5 divided by x to the fourth is (-5/3)x to the negative three plus c.

## Antiderivatives

To find the antiderivative of a function, you need to find Onction whose derivative is the original function. Here are some examples:

- The antiderivative of Whis In x
- The antigenvative of e^(1C is (1/4)e^ (4x)
- The antiderivative of **cos x** is **sin x** and the antiderivative of **sin x** is **-cos x**
- The antiderivative of sec<sup>2</sup> x is tan x

If the function is not in a simple form, **u substitution** can be used. This involves replacing all x variables with u variables and solving for dx. For example:

The antiderivative of x^2sin(x^3) can be found by making u = x^3 and solving for dx, then replacing x^3 with u. The final answer is -(1/3)cos(x^3) + C