Section 4.10 - Antiderivatives, p. 299 Stewart, 4th Ed.

Antidifferentiation is the opposite of differentiation. It is more difficult than differentiation and is a very important skill you will develop in this course.

Recall. If $f(x) = x^2$, then the *derivative* is $f'(x) = 2x$.
Now. An *antiderivative* of $g(x) = 2x$ is $G(x) = x^2$, because $G'(x) = g(x)$.
Other antiderivatives include $x^2 + 1$, $x^2 - 5$, $x^2 + \pi$, etc.

We say the **general antiderivative** of $g(x) = 2x$ is $G(x) = x^2 + C$, where C is a constant.

Notes:

Example. Find the general antiderivative of $f(x) =$

1. $\cos x$
2. $\sin x$
3. x^n for $n \neq -1$

Answers:

1.

2.

3.

Procedure:

1. Think of what function it looks like the derivative of
2. Check by differentiating; fix if necessary
3. Add "$+C$".

Example. $f(x) = 3x + 5$.
Solution:

Workshop: