

## 4.1 Antiderivatives and Indefinite Integration

Given  $f'(x)$ , find  $f(x)$ .  
Go backwards!

<u><math>f'(x)</math></u>	<u><math>f(x)</math></u>
$y' = 2x$	$y = x^2$
$y' = x$	$y = \frac{1}{2}x^2$
$y' = x^2$	$y = \frac{1}{3}x^3$
$y' = 5x^4$	$y = x^5$
$y' = \frac{1}{x^2} = x^{-2}$	$y = -x^{-1}$
$y' = \frac{1}{x^3} = x^{-3}$	$y = -\frac{1}{2}x^{-2}$
$y' = \cos x$	$y = \sin x$

\* Antiderivative of a function  $f$   
is a function  $F$  such that  
 $F' = f$