

# Inverse Operations

(Opposite Operations that “UNDO” each other)

Operation	Symbols	Inverse operation
Addition	+	- Subtraction
Multiplication	•	÷ Divide
Square of $x$ (power of 2)	$x^2$	$\sqrt{x}$ Square root of $x$
Cube of $x$ (power of 3)	$x^3$	$\sqrt[3]{x}$ Cube root of $x$
$n^{\text{th}}$ power of $x$	$x^n$	$\sqrt[n]{x}$ $n^{\text{th}}$ root of $x$
Sine of $x$	$\sin(x)$	$\sin^{-1}(x)$ Arcsine of $x$ (sine inverse)
Cosine of $x$	$\cos(x)$	$\cos^{-1}(x)$ Arccosine of $x$ (cosine inverse)
Tangent of $x$	$\tan(x)$	$\tan^{-1}(x)$ Arctangent of $x$ (tangent inverse)

## Using Inverse Properties

Addition	Multiplication
$a + (-a) = 0$ $a$ & $-a$ are inverses.	$a \cdot \frac{1}{a} = 1$ $a$ & $\frac{1}{a}$ are inverses. (reciprocals)
$\frac{a}{b} + \left(-\frac{a}{b}\right) = 0$ $\frac{a}{b}$ & $-\frac{a}{b}$ are inverses.	$\frac{a}{b} \cdot \frac{b}{a} = 1$ $\frac{a}{b}$ & $\frac{b}{a}$ are inverses. (reciprocals)

\*With addition the inverse is the opposite sign

\*With multiplication, the inverse is the same sign