

## LOG LAWS:

Logarithms can be manipulated using log laws, as seen below.

$$\cdot \log_a xy = \log_a x + \log_a y$$

$$\cdot \log_a \frac{x}{y} = \log_a x - \log_a y$$

$$\cdot \log_a 1 = 0$$

$$\cdot \log_a a = 1$$

$$\cdot \log_a x^p = p \log_a x$$

$$\cdot \log_a a^x = x$$

$$\cdot \log_a x = \frac{\log_b x}{\log_b a}$$

$$\cdot a^{\log_a x} = x$$

### 5.3 WORKED EXAMPLE

Simplify this expression:

$$\log_2 2^x$$

### 5.4 WORKED EXAMPLE

Evaluate:

$$e^{\log_e(3x+2)} + 4$$