Notes 9.2 Exponents

$$5^{4} = 5 \cdot 5 \cdot 5 \cdot 5$$

(4: exponent; 5: base)

An exponent represents repeated multiplication of the base number.

Properties of Exponents

$$2^3 \cdot 2^4 = \underbrace{2 \cdot 2 \cdot 2}_{2^3} \cdot \underbrace{2 \cdot 2 \cdot 2 \cdot 2}_{2^4} = 2^7$$

$$11^3 \cdot 11^5 = \underbrace{11 \cdot 11 \cdot 11}_{11^3} \cdot \underbrace{11 \cdot 11 \cdot 11 \cdot 11 \cdot 11}_{11^5} = 11^8$$

$$\boxed{x^a \cdot x^b = x^{a+b}}$$

$$\frac{3^6}{3^2} = \frac{3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3}{3 \cdot 3 \cdot 1} = \frac{3^4}{1} = 3^4$$

$$\frac{13^5}{13^3} = \frac{13 \cdot 13 \cdot 13 \cdot 13 \cdot 13}{13 \cdot 13 \cdot 13 \cdot 1} = \frac{13^2}{1} = 13^2$$

$$\boxed{\frac{x^a}{x^b} = x^{a-b}}$$