

# *Sum & Difference Of Powers*

$$a^n - b^n = (a - b)(a^{n-1} + a^{n-2}b + a^{n-3}b^2 + \dots + a^2b^{n-3} + ab^{n-2} + b^{n-1})$$

$$a^n + b^n = (a + b)(a^{n-1} - a^{n-2}b + a^{n-3}b^2 - \dots + a^2b^{n-3} - ab^{n-2} + b^{n-1})$$

**NOTE:**  $n$  must be odd

e.g.  $x^5 - 32 = x^5 - 2^5$

$$= \underline{(x - 2)(x^4 + 2x^3 + 4x^2 + 8x + 16)}$$

**Exercise 6M; 1dhlo, 2bdf, 4b**