ALGEBRA

QUADRATIC FORMULA

If $AX^2 + BX + C = 0$ (where $A \neq 0$)

then $X = \dfrac{-B + \sqrt{B^2 - 4AC}}{2A}$ or $X = \dfrac{-B - \sqrt{B^2 - 4AC}}{2A}$.

These two solutions are also written as

$$X = \frac{-B \pm \sqrt{B^2 - 4AC}}{2A}$$

FACTORING

$X^2 - Y^2 = (X + Y)(X - Y)$

$X^3 + Y^3 = (X + Y)(X^2 - XY + Y^2)$

$X^3 - Y^3 = (X - Y)(X^2 + XY + Y^2)$

$X^4 - Y^4 = (X^2 + Y^2)(X^2 - Y^2)$
       $= (X^2 + Y^2)(X + Y)(X - Y)$ <final answer>

EXPONENTS AND RADICALS

$A^0 = 1$ (where $A \neq 0$) $\left(\dfrac{A}{B}\right)^X = \dfrac{A^X}{B^X}$

$A^X A^Y = A^{X+Y}$ $\dfrac{A^X}{A^Y} = A^{X-Y}$

$(AB)^X = A^X B^X$ $(A^X)^Y = A^{XY}$

$A^{-X} = \dfrac{1}{A^X}$ $A^{\frac{X}{Y}} = \left(\sqrt[Y]{A}\right)^X = \sqrt[Y]{A^X}$