## Polynomials - Quadratic

16/9/2023

PREPARED BY KYLE CHUNG

## Polynomials - Quadratic

Consider the quadratic polynomial

$$f(x) = ax^2 + bx + c$$

where  $a \neq 0$ , then

$$f(x) = ax^{2} + bx + c$$

$$= a\left(x^{2} + \frac{b}{a}x + \frac{c}{a}\right)$$

$$= a\left[\left(x + \frac{b}{2a}\right)^{2} - \left(\frac{b}{2a}\right)^{2} + \frac{c}{a}\right]$$
 (completing the square)
$$= a\left[\left(x + \frac{b}{2a}\right)^{2} - \left(\frac{b^{2} - 4ac}{4a^{2}}\right)\right].$$

16/9/202

© DDEDADED BY KYLE CHLIN

1

## Quadratic Equations

For 
$$f(x) = ax^2 + bx + c = 0$$
, we have

$$x = -\frac{b}{2a} \pm \sqrt{\frac{b^2 - 4ac}{4a^2}}$$
$$= \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

16/9/2023 © PREPARED BY KYLE CHUNG