

MBF3C1 QUADRATICS II LEARNING GOALS

- Expand Binomials (5.1)

$$\begin{aligned} & (2x+1)(3x-1) \\ &= 6x^2 - 2x + 3x - 1 \quad \leftarrow \text{collect like terms.} \\ &= 6x^2 + x - 1 \end{aligned}$$

- Convert to Standard form by Expanding (5.2)

- Convert to factored (intercept form) by factoring (5.3/5.4/5.5)

$$\begin{aligned} y &= 3x^2 + 12x - 15 \\ y &= 3(x^2 + 4x - 5) \quad \leftarrow \text{Common factor first!} \\ y &= 3(x-1)(x+5) \quad \leftarrow \text{binomial factor} \end{aligned}$$

- Solve word problems involving (5.6)

MBF3C1 QUADRATICS II LEARNING GOALS (CONTD.)

- Find the vertex of a parabola given Standard or factored form

$$y = x^2 + 4x - 5$$

$$\textcircled{1} y = (x-1)(x+5)$$

$$\textcircled{2} 0 = (x-1)(x+5)$$

$$x=1 \quad \text{or} \quad x=-5$$

$$\textcircled{3} \text{ Find AoS } x = \frac{1+(-5)}{2}$$

$$x = \frac{-4}{2}$$

$$x = -2$$

$$\textcircled{4} y = (-2)^2 + 4(-2) - 5$$

$$y = 4 + (-8) - 5$$

$$y = -9$$

∴ the vertex is at (-2, -9)

Vertex form:

$$y = a(x-h)^2 + k$$

$$y = (x+2)^2 - 9$$

① Factor (r.s)

② Find zeros

③ Use zeros to find the AoS ($x = \frac{r+s}{2}$)

④ Sub in x-coord. of vertex to find the y-coordinate