

W4 - Quadratics in Standard Form

MPM2D

Jensen

Unit 5

1) Find the x -intercepts and the vertex of each parabola. Then, sketch its graph.

a) $y = x^2 - 6x + 8$

$$0 = (x-4)(x-2)$$

$$x-4=0 \quad x-2=0$$

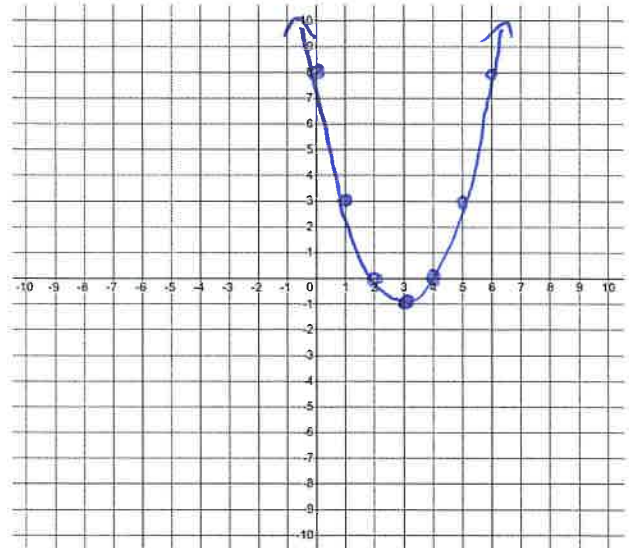
$$x=4 \quad x=2$$

$$x\text{-ints: } x=2, 4$$

$$x\text{-vertex} = \frac{2+4}{2} = 3$$

$$y\text{-vertex} = (3)^2 - 6(3) + 8 = -1$$

$$\text{Vertex: } (3, -1)$$



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

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

$$0 = -(x+5)(x-1)$$

$$x+5=0 \quad x-1=0$$

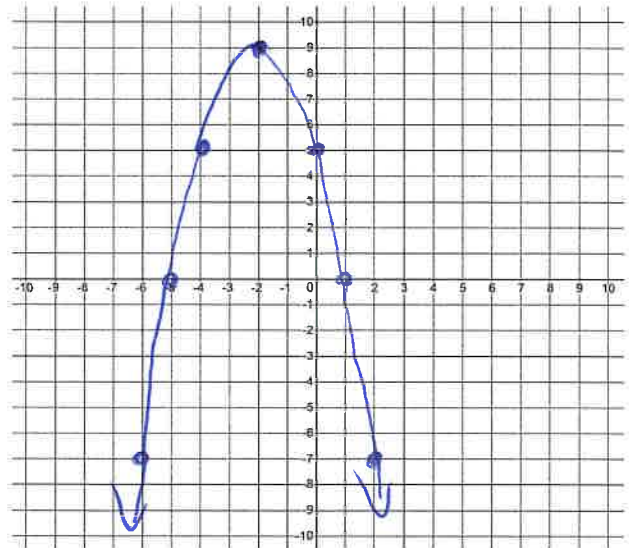
$$x=-5 \quad x=1$$

$$x\text{-int: } x=-5, 1$$

$$x\text{-vertex} = \frac{-5+1}{2} = -2$$

$$y\text{-vertex} = -(-2)^2 - 4(-2) + 5 = 9$$

$$\text{Vertex: } (-2, 9)$$



c) $y = x^2 - 9$

$$0 = (x-3)(x+3)$$

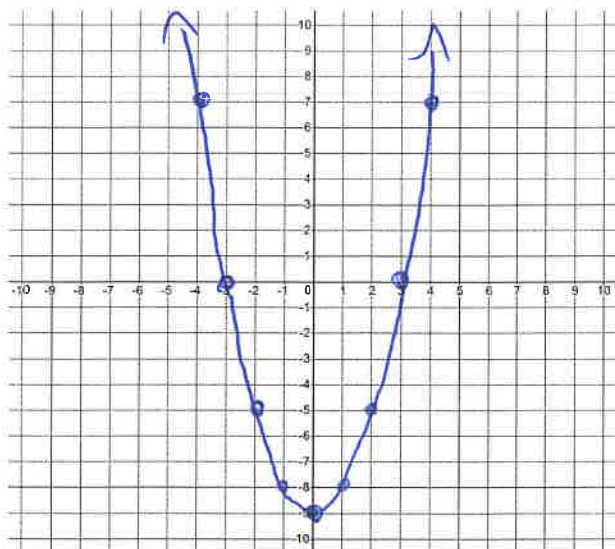
$$x-3=0 \quad x+3=0$$

$$x=3 \quad x=-3$$

$$x\text{-vertex} = \frac{3+(-3)}{2} = 0$$

$$y\text{-vertex} = (0)^2 - 9 = -9$$

$$\text{vertex: } (0, -9)$$



d) $y = x^2 - 12x + 36$

$$0 = (x-6)^2$$

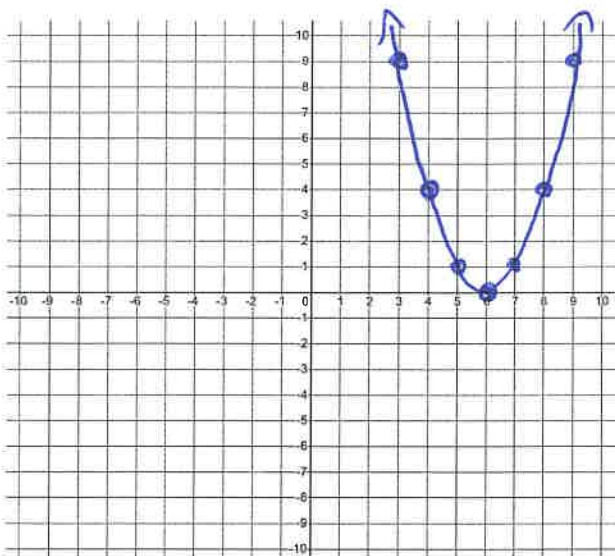
$$x-6=0$$

$$x=6$$

$$x\text{-vertex} = 6$$

$$y\text{-vertex} = (6)^2 - 12(6) + 36 = 0$$

$$\text{vertex: } (6, 0)$$



e) $y = 2x^2 - 3x + 4$

$$0 = 2x^2 - 3x + 4$$

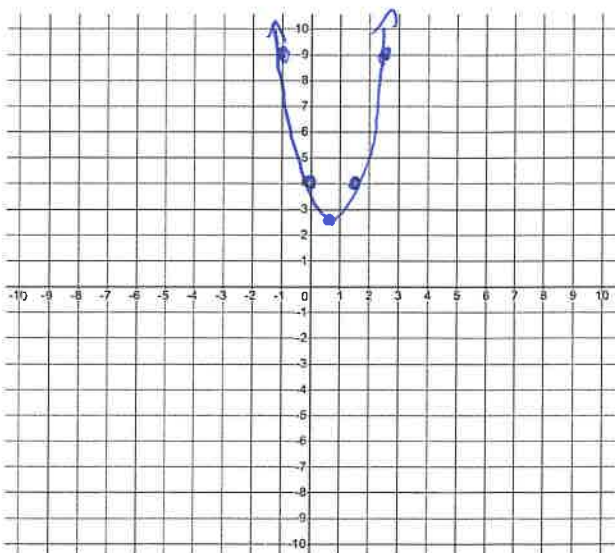
$$x = \frac{3 \pm \sqrt{(-3)^2 - 4(2)(4)}}{2(2)}$$

$$x = \frac{3 \pm \sqrt{-23}}{4} \quad \text{no } x\text{-int.}$$

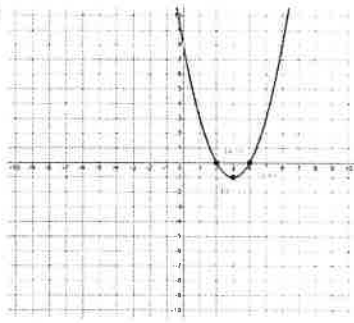
$$x\text{-vertex} = \frac{3}{2(2)} = \frac{3}{4} = 0.75$$

$$y\text{-vertex} = 2\left(\frac{3}{4}\right)^2 - 3\left(\frac{3}{4}\right) + 4 = \frac{23}{8} = 2.875$$

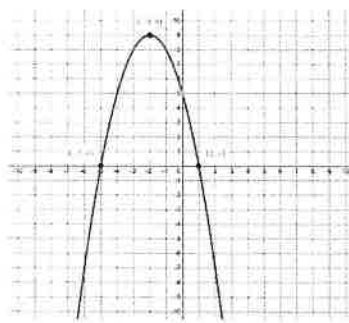
$$\text{vertex: } (0.75, 2.875)$$



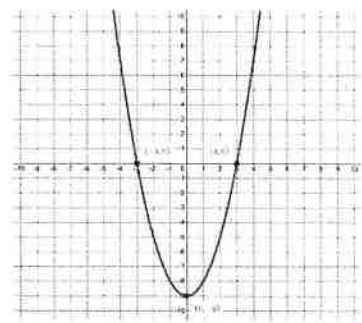
1)a)



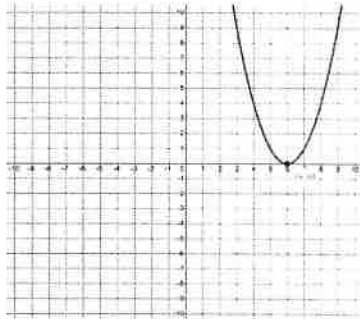
b)



c)



d)



e)

