

Algebra 201-007-50 C1

Quiz 12

December 4, 2008

Name: SOLUTIONS
Student ID: _____

1. (10 marks). Sketch the graph of each parabola, noting the intercepts and the vertex:

a)

y-int: $x=0$

$$y = (0)^2 + 6(0) = 0$$

$\therefore (0,0)$ is

THE y-int

x-int: $y=0$

$$0 = x^2 + 6x$$

$$0 = x(x+6)$$

$$\begin{array}{cc} \swarrow & \searrow \\ x=0 & x=-6 \end{array}$$

$\therefore (0,0)$ AND $(-6,0)$

ARE THE x-int

VERTEX:

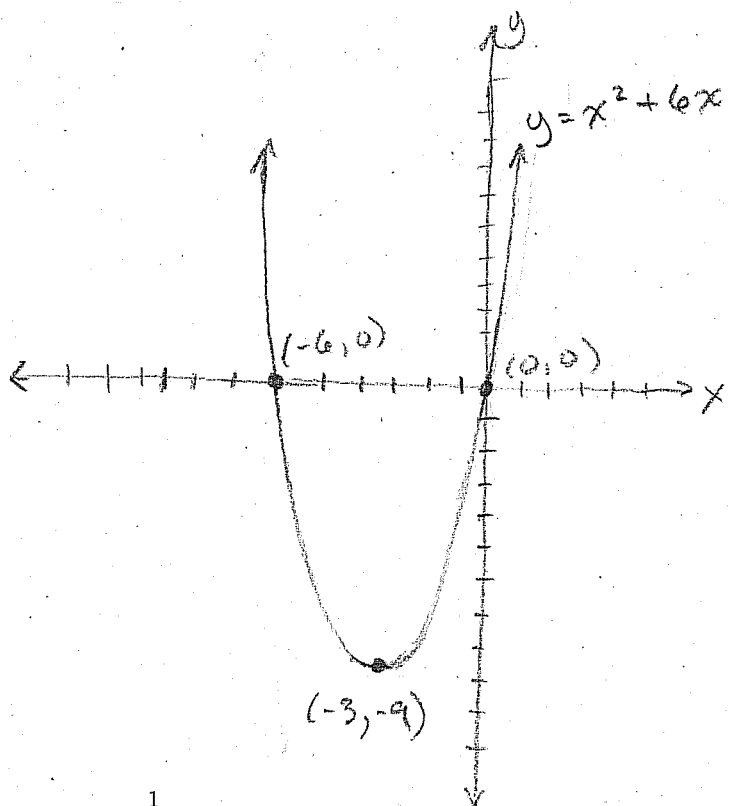
$$x = \frac{-b}{2a} = \frac{-6}{2(1)} = -3$$

1

$$\begin{aligned} y_v &= (-3)^2 + 6(-3) \\ &= 9 - 18 = -9 \end{aligned}$$

$\therefore (-3, -9)$ IS THE
VERTEX

$$y = x^2 + 6x$$



b)

y-int: $x=0$

$$y = -(0)^2 + 4(0) - 1 = -1$$

$\therefore (0, -1)$ IS THE
y-int

VERTEX:

$$x = \frac{-b}{2a} = \frac{-(4)}{2(-1)} = 2$$

$$y_v = -(2)^2 + 4(2) - 1 \\ = -4 + 8 - 1 = 3$$

$\therefore (2, 3)$ IS THE
VERTEX

$$y = -x^2 + 4x - 1$$

x-int: $y=0$

$$0 = -x^2 + 4x - 1,$$

$$a = -1, b = 4, c = -1$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-4 \pm \sqrt{(4)^2 - 4(-1)(-1)}}{2(-1)}$$

$$= \frac{-4 \pm \sqrt{16 - 4}}{-2} = \frac{-4 \pm \sqrt{12}}{-2} = \frac{-4 \pm \sqrt{4}\sqrt{3}}{-2}$$

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

$$= 2 \mp \sqrt{3}, \quad (2 + \sqrt{3} \approx 3.73, 2 - \sqrt{3} \approx 0.27)$$

$\therefore (2 - \sqrt{3}, 0)$ AND $(2 + \sqrt{3}, 0)$ ARE THE
x-int

