

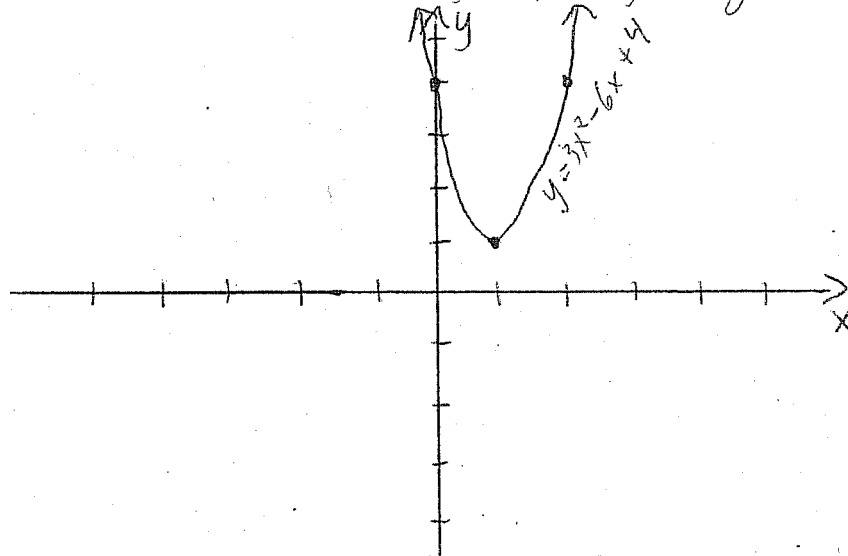
## Quiz 5

This quiz is graded out of 10 marks. No books, notes or cell phones are allowed. You must show all your work, the correct answer is worth 1 mark the remaining marks are given for the work. If you need more space for your answer use the back of the page.

**Question 1.** pg.101#1t (6 marks)

Find the x-intercepts, y-intercept, vertex and range of  $y = 3x^2 - 6x + 4$  then graph the parabola.

Lets first find the vertex by completing the square



$$\begin{aligned} y &= 3x^2 - 6x + 4 \\ &= 3\left[x^2 - 2x + \frac{4}{3}\right] \\ &= 3\left[x^2 - 2x + 1 - 1 + \frac{4}{3}\right] \\ &= 3\left[(x-1)^2 - 1 + \frac{4}{3}\right] \\ &= 3(x-1)^2 - 3 + 4 \\ &= 3(x-1)^2 + 1 \end{aligned}$$

∴ vertex at (1, 1)

the y-intercept is located at (0, 4)

There are no x-ints since  $\Delta = b^2 - 4ac = 6^2 - 4(3)(4) < 0$

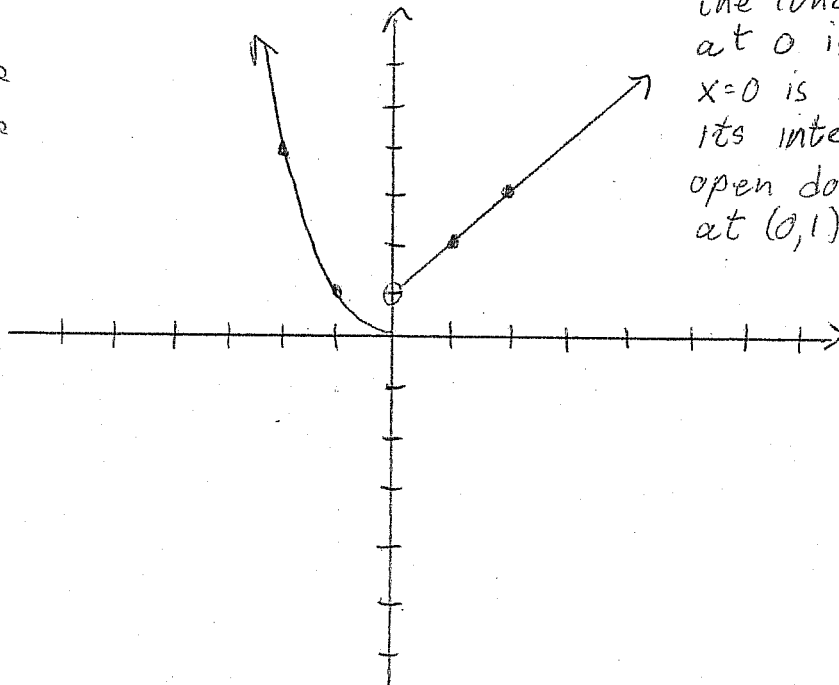
The range is  $[1, \infty)$

**Question 2.** pg.110#5 (4 marks)

Graph the following piece-wise function:

$$f(x) = \begin{cases} x^2 & \text{if } x \leq 0 \\ x+1 & \text{if } x > 0 \end{cases}$$

x	f(x)
-2	$4 = (-2)^2$
-1	$1 = (-1)^2$
0	$0 = (0)^2$
1	$2 = 1+1$
2	$3 = 2+1$



The  $x+1$  piece of the function evaluated at 0 is 1. But since  $x=0$  is not part of its interval so an open dot is placed at (0, 1).