

# Elementary Mathematics 6101

## Exercise Sheet 4

27 October 2010

Please answer all questions on the sheet.

1. Sketch the following quadratic equations

a)  $2x^2 - 3x + 1 = 0$

b)  $x^2 - 4x + 2 = 0$

c)  $x^2 - 2x + 2 = 0$

d)  $x^2 - 9 = 0$

2. What are the points intersection of the following line and quadratics.

a)  $y = x^2 - 2x + 3$  and  $y = x^2 - 3x - 1 = 0$

b)  $y = x^2 + 3x - 3$  and  $y = x - 2$

3. Solve  $x - 3\sqrt{x} - 1 = 0$  (Hint: let  $y = \sqrt{x}$ ).

4. Factorise the following:

a)  $x^3 - a^3$

b)  $x^3 + 6x^2 + 11x + 6$  given that  $x = -1$  is a solution of  $x^3 + 6x^2 + 11x + 6 = 0$

5. What is the equation of a circle of radius 2 centred at  $(2, -1)$ ?

6. Given the equation  $4x^2 + 4y^2 - 4x + 8y - 7 = 0$  is an equation of a circle, what is its radius and where is the centre?