

**MATH 100 – MIDTERM 1**

Name \_\_\_\_\_

Student Number \_\_\_\_\_

**1] (8 marks)** Sketch graphs of the following. Write down the x and y intercepts.  
Write down the ranges and the domains.

**a]**  $y := x^2 + 4x$

**b]**  $y := |x + 3| - 1$

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**2] (8 marks)**

**a]** Write down the equation of the line through the points  $(-1, 2)$  and  $(2, 3)$ .

**b]** Write down the equation of the line tangent to the circle  $x^2 + y^2 = 18$  at the point  $(-3, -3)$ .

**3] (8 marks)** Find all solutions of the following equations:

**a]**  $x^2 + 9x - 7 = 0$

**b]**  $|5x - 3| = 2 - 3x$

**c]**  $x^4 + 5x^2 + 4 = 0$

**d]**  $x^{32} + 9x^2 + 1 = 0$

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4] (8 marks) A piece of wire 12cm long is bent to form a right triangle in which the shortest side is 2cm. What are the lengths of the other two sides?

5] (8 marks) Give the sets determined by the following inequalities.

a]  $x(x^2 - 1) > 0$ .

b]  $\frac{1-x}{2-x} + \frac{1+x}{2+x} \geq 0$ .