Chapter 1 Review Sheet

Calculus

1) Given the function $y = \frac{|x-2|+2}{x}$

a) Rewrite this function as a piecewise function (2 separate functions)

b) Use your calculator to solve the inequality $\frac{|x-2|+2}{x} < 2$

2) Given the parabola $y = 4x^2 - 8x - 1$

a) find the axis of symmetry and vertex ***algebraically***

b) graph the parabola on your calculator and find the solutions of $4x^2 - 8x - 1 = 0$ (each to 3 decimal places)

c) verify your answers in 2b by using the quadratic formula

3) Find the center and radius of this circle $x^2 + y^2 + 8x + 2y = 64$

4) Given $f(x) = -2x + 4$
   a) find $f^{-1}(x)$

   b) find $f(f^{-1}(x))$

   c) find $f^{-1}(f(x))$

5) Given the function $f(x) = x^3 - 7x^2 + 12x - 2$
   a) Is this a "1-1" function?

   b) Find the roots of $x^3 - 7x^2 + 12x - 2 = 0$ (each to 3 decimal places)

6) Test ***algebraically*** whether or not the following graphs are symmetric to the x-axis, y-axis and/or origin:

a) $y = x^3$

b) $y = x^4$

c) $x^2 - y^2 = 4$

d) $x - y = 4$

7) Find an equation for the line that passes through the two given points for each of the following:

a) (-2, -2) & (1, 3)

b) (2, -1) & (4, 4)

8) Given the point **P(6, 0)** and the line **L: $2x - y = -2$**

a) Find an equation for the line through P parallel to L

b) Find an equation for the line through P perpendicular to L

9) Give the domain for each of the following functions:

a) $y = \sqrt{x-4}$

b) $y = \frac{3\sqrt{x}}{x}$

10) State whether each of the following functions are even, odd or neither:

a) $y = \cos x$

b) $y = x^2 + 1$

c) $y = -x^4$

11) Solve each equation and give *exact* answers when necessary.

a) $\sin x = .41$

b) $\cos x = -\sqrt{2}/2$

c) $\cos x = .7x$

12) Find the arc length if the angle is 60° and the radius is 12.