**Course Methods Year 11 Test 2**

Student name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Teacher name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Task type: Response**

**Time allowed for this task: 40 mins**

**Number of questions: 5**

**Materials required:** Formula Sheet and 1 page both sides of notes permitted.

 No Calculators allowed.

Standard items: Pens (blue/black preferred), pencils (including coloured), sharpener, correction fluid/tape, eraser, ruler, highlighters

Special items: Drawing instruments.

**Marks available: 38 marks**

**Task weighting: 10 %**

**Formula sheet provided: Yes**

**Note: All part questions worth more than 2 marks require working to obtain full marks.**

1. (1.1.10-1.1.11) **(3, 2, 2, 4 = 11 marks)**

(a) Part of the graph of  is shown below.



 Determine the values of the coefficients a and b. (3 marks)

(b) A quadratic has equation . Determine

(i) the coordinates of its turning point. (2 marks)

(ii) the exact values of the zeros of the quadratic. (2 marks)

(c) Show if it is possible to bend a 12 cm length of wire to form the perpendicular sides of a right angled triangle with area 20cm? (4 marks)

Question 2 (1.1.21, 1.1.22) (2, 1, 3, 3 = 9 marks)

(a) A circle of radius 5 has its centre at (6, -4).

(i) Determine the equation of this circle. (2 marks)

(ii) State, with justification, whether the point (9, -8) lies on the circle. (1 mark)

(b) Determine the centre and radius of the circle with equation  .

 (3 marks)

(c) Find the equation of the curve drawn below. (3 marks)



 (-3,-2)

(6,4)

Question 3 (1.1.14) (2, 2, 2 = 6 marks)

A rectangular hyperbola has asymptotes with equation $x=-2$ and $y=4$.

1. Write two possible equations for this function
2. Write the equation of this function if it has a *y*-intercept at (0,5)
3. Write the equation of this function if it passes through the point (3,5)

Question 4 (1.1.24) (1, 2, 1, 2 = 6 marks)

1. Given $f\left(x\right)=x^{2}-2x$
2. What type of correspondence does $f$ show? Circle one of the following.

Many-to-one One-to-many One-to-one

1. If the domain of $f $is $f\left(x\right)\in R, -4\leq x\leq 5$, find the range of $f.$
2. Given $y=2+\sqrt{4-x^{2}}$
3. What is the largest possible value of $y$.
4. Determine the domain and range.





Question 5 (1.1.24) (1, 1, 2, 2 = 6 marks)

Suppose $G\left(x\right)=\frac{2x-3}{x-4}$.

1. Evaluate $G\left(2\right)$
2. Find a value of x such that $G\left(x\right)$ does not exist.
3. Find $G(x+2)$ in simplest form.
4. Find *x* such that $G\left(x\right)= -3.$