PERTH MODERN SCHOOL
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Independent Public School

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**

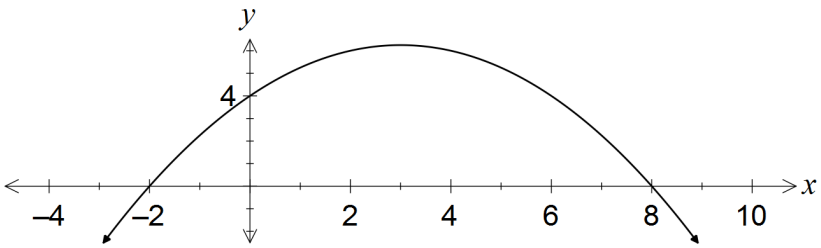
Task weighting: **10 %**

Formula sheet provided: **Yes**

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

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

(a) Part of the graph of $y = ax^2 + bx + 4$ is shown below.



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

(b) A quadratic has equation $y = x^2 - 6x + 2$. 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)**

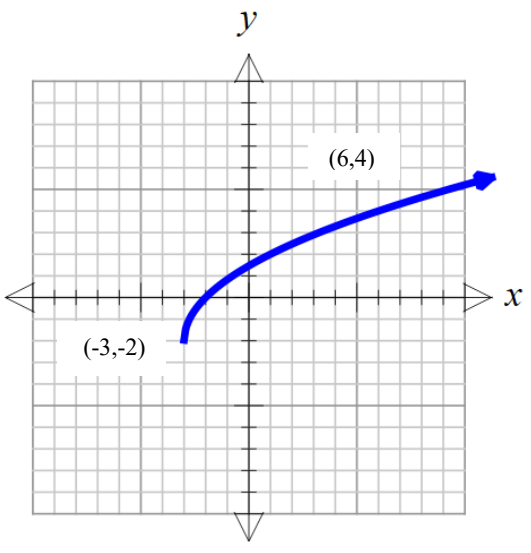
(a) A circle of radius 5 has its centre at (6, -4).

(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 $x^2 + y^2 - 4x + 6y + 9 = 0$.
(3 marks)

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



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

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

a) Write two possible equations for this function

b) Write the equation of this function if it has a *y*-intercept at (0,5)

c) 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)**

a) Given $f(x) = x^2 - 2x$

i) What type of correspondence does f show? Circle one of the following.

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

ii) If the domain of f is $f(x) \in R,\ -4 \leq x \leq 5$, find the range of f.

b) Given $y = 2 + \sqrt{4 - x^2}$

i) What is the largest possible value of y.

ii) Determine the domain and range.

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

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

a) Evaluate $G(2)$

b) Find a value of x such that $G(x)$ does not exist.

c) Find $G(x+2)$ in simplest form.

d) Find *x* such that $G(x) = -3$.