PERTH MODERN SCHOOL
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Test Two

Semester One 2018
UNIT 1 METHODS

Calculator Free 40 minutes /40 marks

Formula Sheet is permitted

Name:

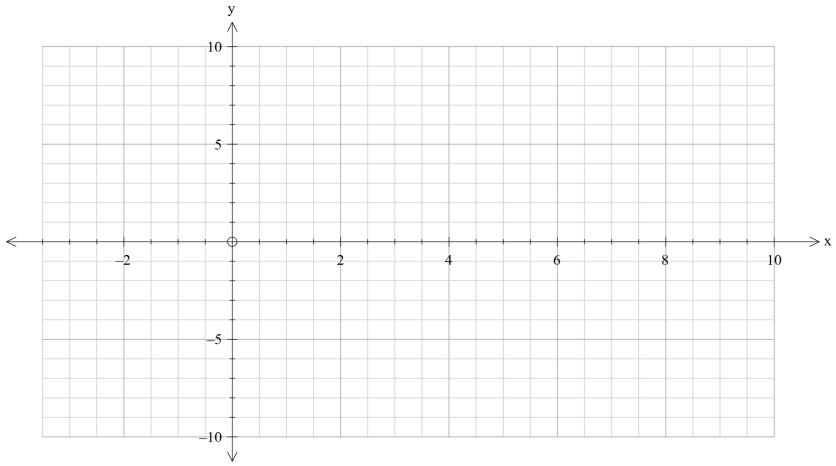
Place a tick in the box next to your Mathematics teachers name:

Mr Strain	☐
Ms Sindel	☐
Mrs Rimando	☐
Mr Gannon	☐
Mr Young	☐
Mrs Flynn	☐
Ms Ensly	☐

Question 1 **(4, 2, 2 = 8 marks)**

Given $(y+1)^2=2x-1$,

i) sketch the graph of the equation.

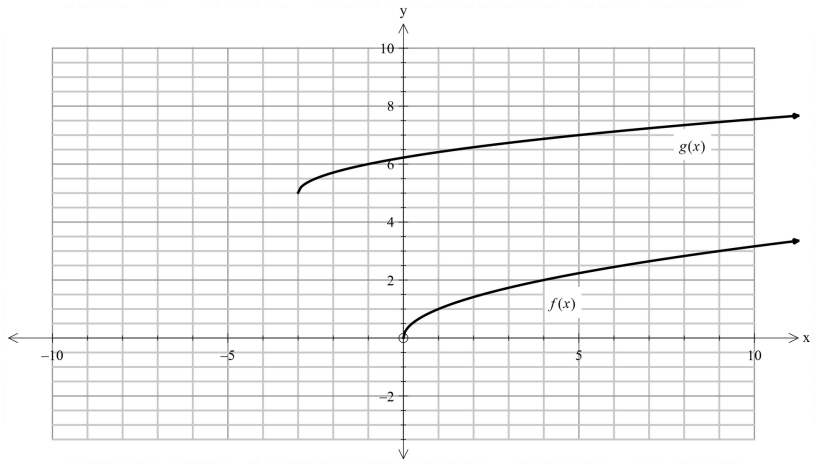


ii) state its domain and range.

iii) Is this graph a function? Justify.

Question 2 **(4, 3 = 7 marks)**

The function $f(x)=\sqrt{x}$ undergoes several transformations that result to $g(x)$ as represented in the graphs below.



i) Identify the order of transformations that would transform $f(x)$ to $g(x)$.

ii) Write the equation of the resulting function $g(x)$.

Question 3 **(2, 2 = 4 marks)**

A circle has its centre at $(-2,-3)$ and passes through the point $(1,1)$.

i) What is the radius of this circle?

ii) State the equation of the circle in expanded form.

End of test

Question 7 **(1, 4 =5 marks)**

There are 100 people in an evacuation centre. Supplies for food are being rationed and their supply will last for 20 days.

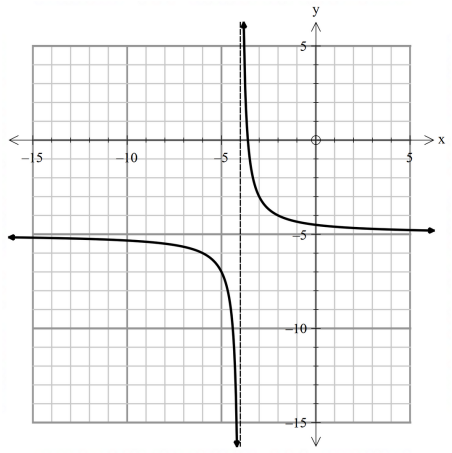
i) Write a variation statement that relates the number of days for food supplies f, to the number of people, p.

ii) Suppose 25 more people are evacuated in the same centre. At the very latest, on what day should their supplies be replenished?

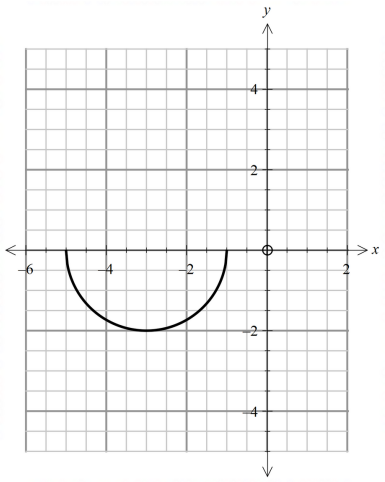
Question 4 **(3, 3 = 6 marks)**

Write the equations of the following graphs:

i)



ii)



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

A pebble is thrown vertically upwards. It has an initial speed of u metres per second. The pebble reaches a maximum height of h metres before falling vertically downwards. It is known that h is directly proportional to u^2. When the pebble is thrown with an initial speed of $10\,m/s$, it reaches a maximum height of 5meters.

i) Write an equation that models this relationship.

ii) Calculate the maximum height reached when the pebble is thrown with an initial speed of $12\,m/s$.

iii) Find the initial speed of the pebble if the maximum height reached is 16 meters. Write your answer as an exact value.

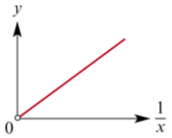
Question 6 **(4 marks)**

State whether the relationships given below model a direct variation, inverse variation or neither.

i) $y=7x-2$

ii) The number of hours to finish a job and the number of workers.

iii)



iv)

x	1	2	3
y	5	2.5	1