



PERTH MODERN SCHOOL  
Exceptional schooling. Exceptional students.

## **Test Two**

### ***Semester One 2018*** **UNIT 1 METHODS**

**Calculator Free 40 minutes /40 marks**

Formula Sheet is permitted

**Name:**

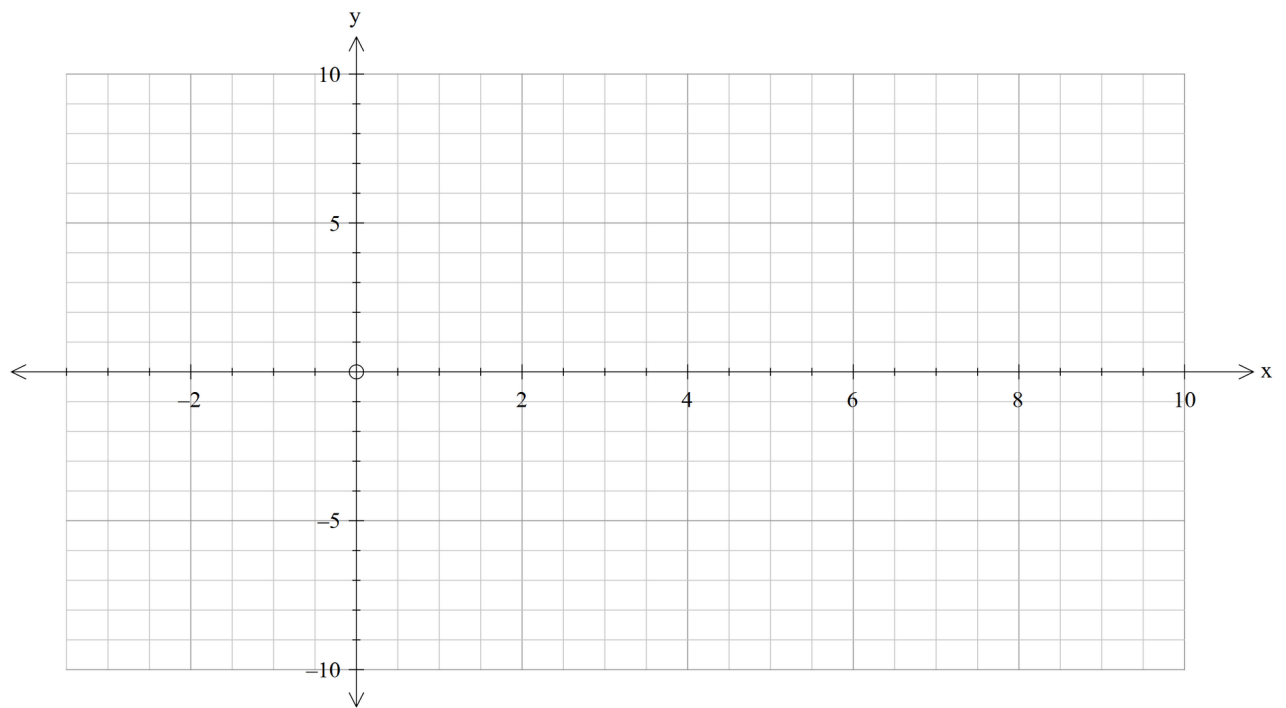
Place a tick in the box next to your Mathematics teachers name:

<b>Mr Strain</b>	<input type="checkbox"/>
<b>Ms Sindel</b>	<input type="checkbox"/>
<b>Mrs Rimando</b>	<input type="checkbox"/>
<b>Mr Gannon</b>	<input type="checkbox"/>
<b>Mr Young</b>	<input type="checkbox"/>
<b>Mrs Flynn</b>	<input type="checkbox"/>
<b>Ms Ensly</b>	<input type="checkbox"/>

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

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

- i) sketch the graph of the equation.

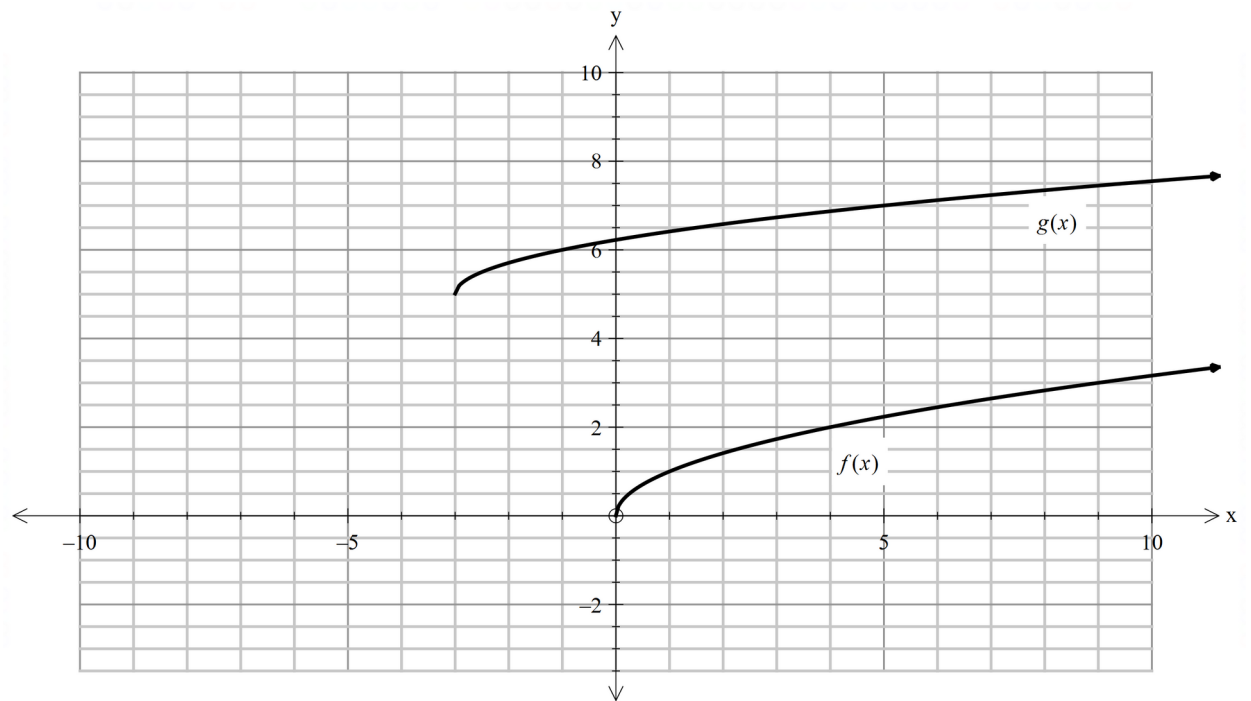


- ii) state its domain and range.

- 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)

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

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

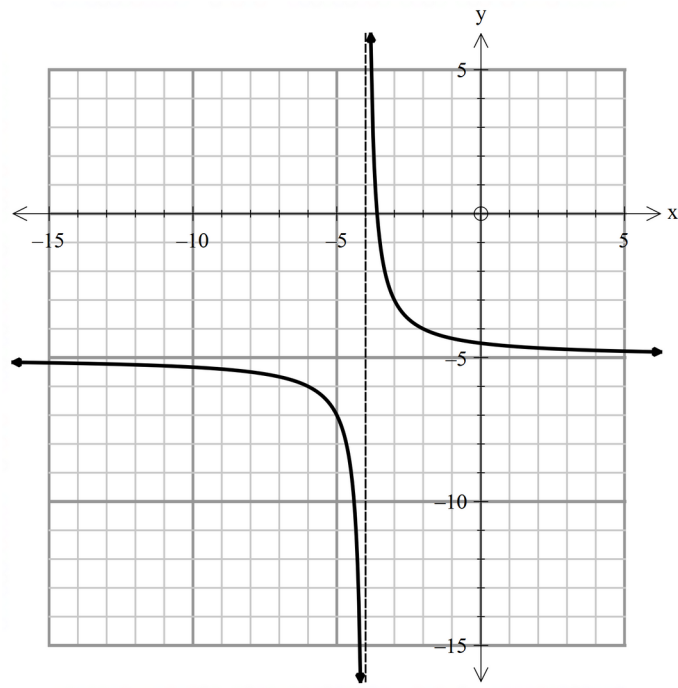
- i) What is the radius of this circle?
- ii) State the equation of the circle in expanded form.

**Question 4**

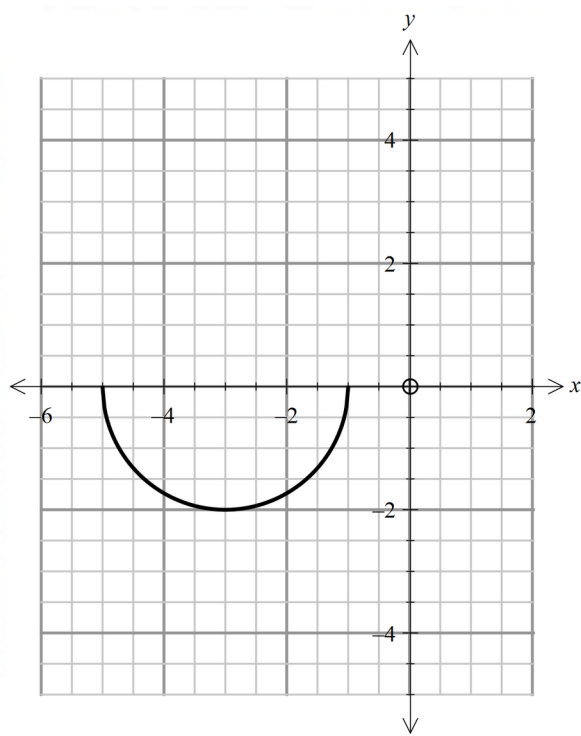
**(3, 3 = 6 marks)**

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  $10\text{ m/s}$ , it reaches a maximum height of 5 meters.

- i) Write an equation that models this relationship.
  
  
  
  
  
  
  
  
  
  
- ii) Calculate the maximum height reached when the pebble is thrown with an initial speed of  $12\text{ m/s}$ .
  
  
  
  
  
  
  
  
  
  
- iii) Find the initial speed of the pebble if the maximum height reached is 16 meters. Write your answer as an exact value.

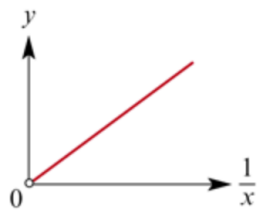
**Question 6****(4 marks)**

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

**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?



**End of test**