MATHEMATICS DEPARTMENT

Year 11 Methods - Test Number 2 2020 Functions

Resource Rich

Name: _____   Teacher: _____

Marks: 15

Reading Time: 2 minutes
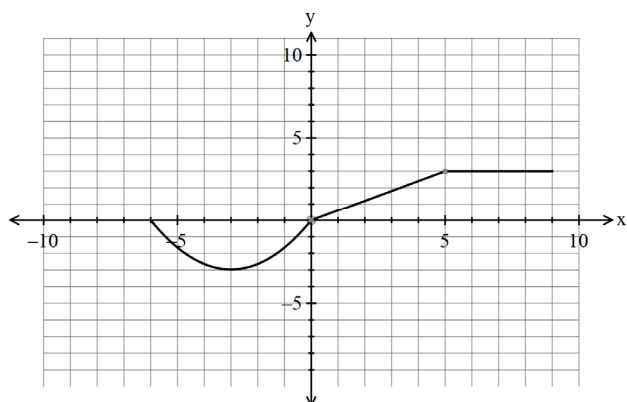
Working Time: 15 minutes

Instructions: You ARE permitted 1 page of notes and your calculator.
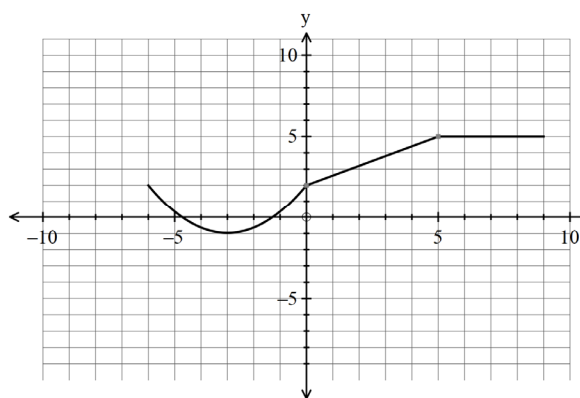
The formula sheet will be provided.
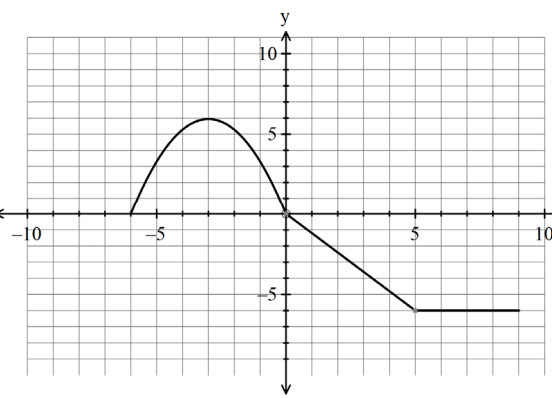
_____

Question 1   **[2, 2 = 4 marks]**
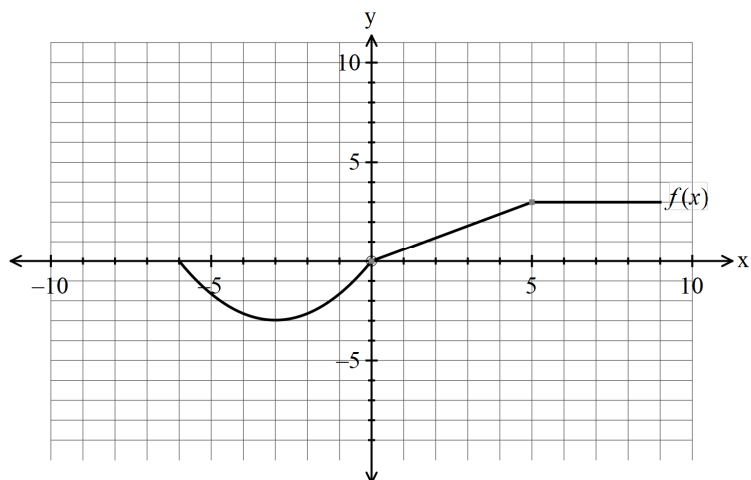
Consider the graph of $y = f(x)$

a) Using function notation to describe the transformations below

_____   _____

b) Draw the graph of $f(x + 3)$ on the graph below

Question 2 [2 marks]

Write down the successive transformations that map $y = f(x)$ to $y = 2f(x) - 4$

Question 3 [4 marks]

Consider the circle with centre O and a chord AB subtended by an angle of θ radians at the centre. Given that the area of the sector OAB is $\frac{25\pi}{12}$ cm^2 and arc length $\frac{5\pi}{6}$. Determine the radius of the circle and the angle θ.

Question 5   **[1, 1, 2, 1 = 5 marks]**

Ship A is equipped with a radar which detects objects within a certain distance of the ship. The radar's detection region is within the circle defined by $(x - 4)^2 + \left(y - \frac{5}{2}\right)^2 = 25$

a) State the coordinates of the location of **Ship A**

b) Determine the radius of the ship's radar.

c) Draw an accurate sketch the relation showing Ship A's location and detection region
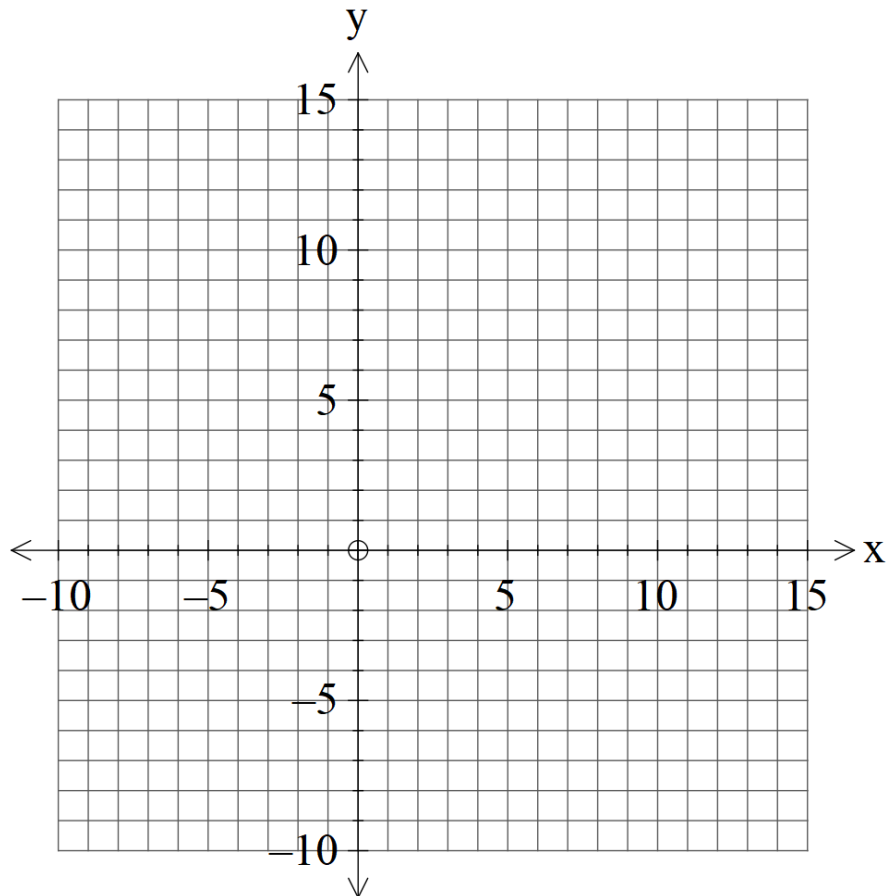
d) Ship B is located at (6, -2). Will ship A be able to detect ship B.