

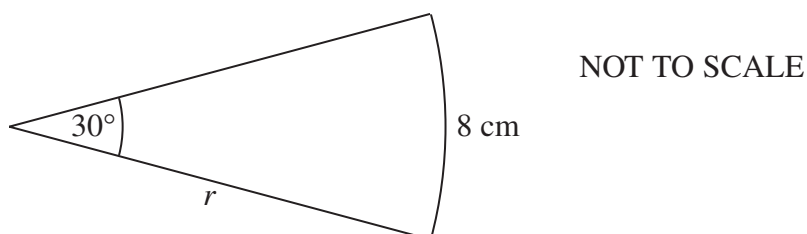
Question 5 (12 marks) Use a SEPARATE writing booklet.

(a) State the domain and range of the function $y = 2\sqrt{25 - x^2}$. 3

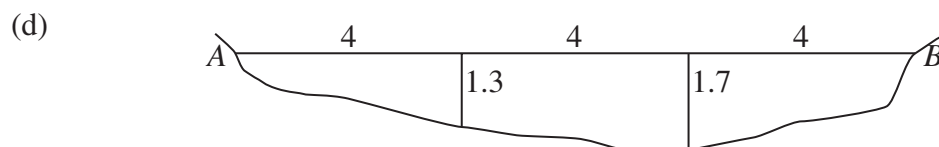
(b) (i) Find $\log_{10}(2^{1000})$ correct to 3 decimal places. 2

(ii) We know that $2^{10} = 1024$, so that 2^{10} can be represented by a 4 digit numeral. How many digits are there in 2^{1000} when written as a numeral? 1

(c) 2



Find the length of the radius of the sector of the circle shown in the diagram. Give your answer correct to the nearest mm.



The diagram shows the cross-section of a creek, with the depths of the creek shown in metres, at 4 metre intervals. The creek is 12 metres in width.

(i) Use the trapezoidal rule to find an approximate value for the area of the cross-section. 2

(ii) Water flows through this section of the creek at a speed of 0.5 m s^{-1} . Calculate the approximate volume of water that flows past this section in one hour. 2