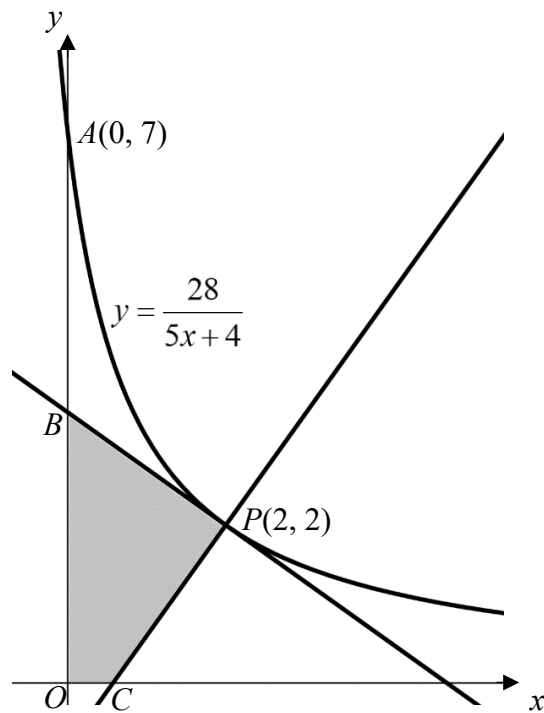


Practice 5 (31 Marks – 46 minute)

Answer all questions in the spaces provided. Show all working clearly.

[2024 AM WA3 Q1]

1



The diagram above (not drawn to scale) shows part of the curve $y = \frac{28}{5x+4}$ intersecting the y -axis at $A(0, 7)$. The tangent to the curve at the point $P(2, 2)$ intersects the y -axis at B . The normal to the curve at P intersects the x -axis at C .

(i) Show that the equation of the tangent to the curve at P is $y = -\frac{5x}{7} + \frac{24}{7}$. [3]

(ii) Find the exact area of shaded region $BPCO$. [7]

[2022 AM WA1 Q4]

- 2 (i) Sketch the graph of $y = |\ln(5x+5)|$, indicating all points of intersection with the axes and the equation(s) of any asymptotes. [3]
- (ii) On the same set of axes from (i), draw the graph of $y = x + \frac{3}{2}$, indicating all points of intersection with the axes. [2]
- (iii) Hence solve the equation $2|\ln(5x+5)| = 2x + 3$. [2]

[2023 AM WA3 Q3]

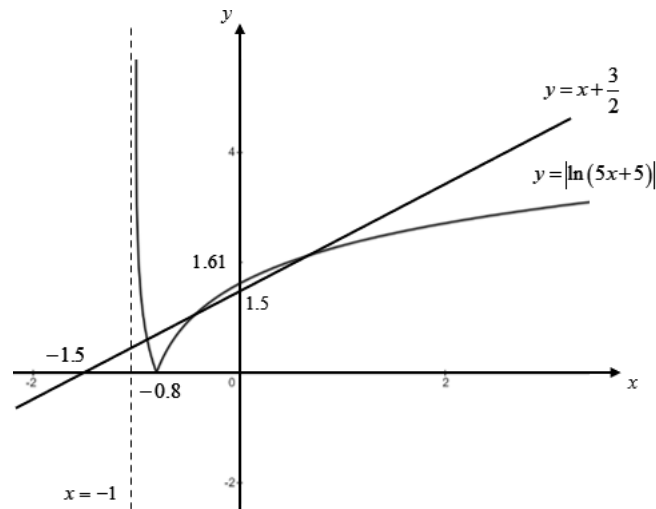
- 3 A gardener uses 30 m of fencing with which to enclose 2 flower beds. One flower bed is to be a square of side x m. The other flower bed is to be a circle of radius r m.
- (i) Show that the total area, A m², of the two flower beds is given by
- $$A = x^2 + \frac{(15-2x)^2}{\pi}. \quad [3]$$
- (ii) Given that x can vary, find the **exact** value of x which gives a stationary value of A . [3]
- (iii) Explain clearly why the gardener might be happy or disappointed with the value of x from **part (ii)**. [3]

[2022 AM WA1 Q2]

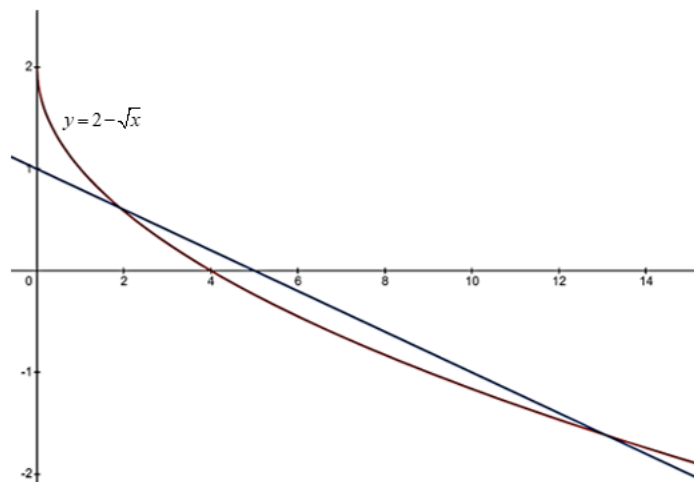
- 4 (i) Sketch the graph of $y = 2 - \sqrt{x}$. [3]
- (ii) By sketching a suitable straight line on the same axes as in (i), state the number of solutions to the equation $2 - \sqrt{x} = 1 - \frac{1}{5}x$. [2]

Answer Keys:1 (i) 4 units²

2 (i) & (ii)

(iii) $x = -0.891$ or -0.398 or 0.543 .3 (ii) $x = \frac{30}{\pi + 4}$ (iii) Disappointed having the small area for planting

4 (i)



(ii) 2