

Indices and surds – 2022 O Level Additional Math**1. June/2022/Paper_11/No.1**

Find constants a , b and c such that $\frac{\sqrt{pq^{\frac{2}{3}}r^{-3}}}{(pq^{-1})^2r^{-1}} = p^a q^b r^c$. [3]

2. June/2022/Paper_11/No.8

- (a) Find the exact coordinates of the points of intersection of the curve $y = x^2 + 2\sqrt{5}x - 20$ and the line $y = 3\sqrt{5}x + 10$. [4]

- (b) It is given that $\tan \theta = \frac{\sqrt{3}-1}{2+\sqrt{3}}$, for $0 < \theta < \frac{\pi}{2}$. Find $\operatorname{cosec}^2 \theta$ in the form $a + b\sqrt{3}$, where a and b are constants. [5]

3. June/2022/Paper_22/No.1

A curve has equation $y = \frac{6 + \sqrt{x}}{3 + \sqrt{x}}$ where $x \geq 0$. Find the exact value of y when $x = 6$. Give your answer in the form $a + b\sqrt{c}$, where a , b and c are integers. [3]

4. June/2022/Paper_22/No.5(a)

(a) Solve the equation $\frac{625^{\frac{x^3-1}{2}}}{125^{x^3}} = 5$.

[3]