

KCB S5 MATHEMATICS TEST FOR WEEKS 3 AND 4

Answer all the questions.

1. Solve the inequality $\frac{1}{x+3} \leq \frac{1}{x}$.
2. Determine the distance between the points to the curve $x^2 y - x y^2 = 12$ where $y = 3$.
3. Solve the equation $(y+2)^2 - 3(y+2) - 4 = 0$.
4. Find the angle between the pair of lines represented by the equation $2x^2 + 5xy - 12y^2 = 0$.
5. Solve for k if $3^{2k+3} = 729$.
6. Find the perpendicular distance from the line $3x - 4y = 7$ to the point T on the line $x - 4y = 12$ where $x = 4$.
7. Solve the equation $2^{4x} - 5 \cdot 2^{2x-1} + 1 = 0$.
8. Given that $a = \log_2 3$ and $b = \log_4 5$, deduce that $\frac{1}{a+b} = 2 \log_{45} 2$.
9. Simplify $\frac{3}{2\sqrt{3}-2\sqrt{2}} + \frac{2}{\sqrt{3}+\sqrt{2}}$.
10. Find the equation of the line through the point $(-3, -2)$ which is concurrent with the lines $y = -3x + 5$ and $2x - y = 10$.
11. Solve the equation $\frac{a^2 + 4a}{3} + \frac{84}{a^2 + 4a} = 11$.
12. Triangle ABC has vertices at the points $(-2, 1)$, $(4, 5)$ and $(-6, -7)$ respectively. Given that E, F and G are the mid-points of AB, AC and BC respectively, find the ratio of the area of triangle ABC to the area of triangle EFG.
13. Given that $p = \log_5 35$ and $q = \log_9 35$, show that $\frac{2pq - 2q + p}{2q} = \log_5 21$.
14. Solve the simultaneous equations $x + 2y + z = 0$, $3x - 2y - 5z = 8$, $2x + 5y - z = 6$.