ALBA MATHEMATICS
Course Revision Questions
Task Sheet 7

1a. Express $3\text{Cos}x° + 2\text{Sin}x°$ in the form $k\text{Sin}(x - a)°$ for $0° \leq x \leq 180°$.

1b. Hence solve the equation $3\text{Cos}x° = 1 - 2\text{Sin}x°$ for $0° \leq x \leq 180°$

2. A straight line with equation $3x - 5y + 1 = 0$ is parallel to another straight line passing through the point (-4, 2). Find the equation of this second line.

3a. Find the rate of change of P with respect to v where $P = 2v^3 - \frac{1}{2}v^2 + 5$.

3b. Calculate the rate of change at $v = -3$.

4. Find the equation of the circle with a diameter AB where A is (-2, 6) and B is (6, 4).

5a. Sketch the graph of $f(x) = 3\text{Sin}2x + 1$ for $0 \leq x \leq 2\pi$

5b. The line with equation y = -1 meets $f(x)$ and P and Q for $0 < x < 180$. Write down the coordinates of P and Q.

6. Show that $4\text{Log}_4 64 = 3\text{Log}_2 32 - \text{Log}_3 27$.

7. Solve $2\text{Cos}\,2x + 5\text{Cos}x - 3 = 0$ for $0 < x < 2\pi$

8. Differentiate $\frac{1}{2}\text{Sin}2x - 3\text{Cos}3x$.

9. Sketch the graph of $y = \log_4 x$, indicating 3 points on the graph

10. Find the equations of the tangents to the circle with equation $x^2 + y^2 + 4x + 8y + 10 = 0$ at the points where $x = 1$.