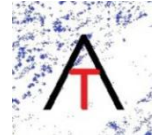




ALBA MATHEMATICS
Course Revision Questions
Task Sheet 7



- 1a. Express $3\cos x^\circ + 2\sin x^\circ$ in the form $k\sin(x - a)^\circ$ for $0^\circ \leq x \leq 180^\circ$.
- 1b. Hence solve the equation $3\cos x^\circ = 1 - 2\sin x^\circ$ for $0^\circ \leq x \leq 180^\circ$
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 $f(x) = 3\sin 2x + 1$ for $0 \leq x \leq 2\pi$
- 5b. The line with equation $y = -1$ meets $f(x)$ at P and Q for $0 < x < 180$. Write down the coordinates of P and Q.
6. Show that $4\log_4 64 = 3\log_2 32 - \log_3 27$.
7. Solve $2\cos 2x + 5\cos x - 3 = 0$ for $0 < x < 2\pi$
8. Differentiate $\frac{1}{2}\sin 2x - 3\cos 3x$.
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 $x = 1$.