ALBA MATHEMATICS
National 5 Course Revision
Task Sheet 2

1. Find the equation of the line passing through the points (5 , 3) and (-3, 7)

2. An antique painting is valued at £3400 in 2014. If it increases in value by 2.6% per year, what will the expected value be in 2018? Give your answer correct to 2 significant figures.

3. a) Express $\frac{4}{\sqrt{50}}$ with a rational denominator. Simplify your answer.

   b) Expand $x^{-4}(x^2 - 2x^3 + x^4)$. Express your answer with positive indices.

4. Simplify $(\text{Sin}x + \text{Cos}x)^2 - 2\text{Sin}x\text{Cos}x$.

5. Solve the system of equations $4x - 3y = -13$
   $3x + 2y = 3$

6. State the nature of the roots in the function $f(x) = 5x^2 + 2x - 3$.

7. The radius of Mars is approximately 3400 km.
   Assuming it is perfectly spherical, work out its volume correct to 3 significant figures, leaving your answer scientific notation.

8. Write $x^2 - 8x + 11$ in the form $(x - a)^2 + b$ and state the values of a and b.

9. A function f has equation $f(x) = 3x + 1$. If $f(2p) = 19$, find the value of p.

10. The graph below has equation $y = ax^2 + b$. Calculate the values of a and b.