1. The standard Normal Variable has probability density function

$$y = \frac{1}{\sqrt{2\pi}} e^{-x^2/2}$$

Find the coordinates of the two points of inflection.

2. Find $\int \frac{x}{4x^2 - 1}\, dx$.

3. Write down the derivative of $\cos^2 x$ and hence find the integral $\int \frac{\sin 2x}{\cos^2 x + 9}\, \mathrm{d}x$

4. The curves C_1 and C_2 have equations $y = x^2 + 1$ and $y = 1 + 2x - x^2$ respectively. Find the area of the finite region enclosed between C_1 and C_2.

5. Using the substitution $x = 3\tan\theta$, evaluate $\displaystyle\int_0^3 \frac{1}{(9+x^2)^2}\,dx$