6 The normal to the curve $y = 1 + \tan 3x$ at the point P with x-coordinate $\frac{\pi}{12}$, meets the x-axis at the point Q.

The line $x = \frac{\pi}{12}$ meets the x-axis at the point R. Find the area of the triangle PQR. [8]

7 A curve $y = \mathrm{f}(x)$ is such that $\dfrac{\mathrm{d}^2y}{\mathrm{d}x^2} = (2-3x)^{-\frac{1}{3}}$. The curve passes through the point $(-2, 10.2)$. The gradient of the tangent to the curve at $(-2, 10.2)$ is –6. Find $\mathrm{f}(x)$. [8]