6 A curve has parametric equations

$$x = \tan\theta, \quad y = \sin\theta - 2\sin^3\theta,$$

for $0 < \theta < \frac{1}{2}\pi$.

(a) Show that $\frac{dy}{dx} = 6\cos^5\theta - 5\cos^3\theta$. [4]

(b) Find the equation of the normal to the curve at the point where it crosses the x-axis. Give your answer in the form $y = mx + c$, where m and c are exact constants. [5]