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**8** **(a)** Show that $\dfrac{\sin\theta\tan^2\theta}{1+\tan^2\theta}$ can be written as $\sin^3\theta$. [2]

**(b)** Hence solve the equation $\dfrac{\sin 3x\tan^2 3x}{1+\tan^2 3x} = \dfrac{1}{8}$ for $-180° \leqslant x \leqslant 180°$. [5]

**9** In this question, all lengths are in metres and time is in seconds.

A particle, $P$, moves in a straight line such that $t$ seconds after passing through a fixed point $O$ its displacement, $s$, is given by $s = 5\ln(2t+1) - 5t$.

**(a)** Find the value of $t$ for which $P$ is instantaneously at rest. [4]

**(b)** Find the distance $P$ travels between $t = 0$ and $t = 2$. [4]

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