8 **(a)** It is given that $y = e^{3x+2} \tan x$.

Use calculus to find the approximate change in y as x increases from 0.1 to $0.1 + h$, where h is small. [5]

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(b) A curve is such that $\frac{dy}{dx} = \sin(3x + \pi)$.

The curve passes through the point $\left(\frac{\pi}{9}, \frac{4}{3}\right)$.

Find the exact y-coordinate of the point on the curve where $x = \frac{5\pi}{12}$. [4]

9 **(a)** The 1st term of an arithmetic progression is 9.
The last term of this progression is 159.
The sum of all the terms is 2604.

The 12th term of this arithmetic progression is the 1st term of a geometric progression.
The 8th term of this arithmetic progression is the 2nd term of the geometric progression.

Find the sum of the first 6 terms of the geometric progression. [7]

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