

① (a) Use a suitable substitution to find  $\int \frac{16x}{(1+4x)^2} dx \quad x \neq -\frac{1}{4}$  (5 marks)

(b) Given that  $y = \frac{\pi}{2}$  when  $x = 0$  solve the differential equation:

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Link to Solutions: <https://youtu.be/8pusE0D0vOY>

$$(1+4x)^2 \frac{dy}{dx} = \frac{x}{\cos^2 y} \quad (5 \text{ marks})$$

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