

12 (a) Express $\frac{2+4x}{x(1+x)(1-x)}$ in partial fractions. **[4]**

The gradient of a curve is given by $\frac{dy}{dx} = \frac{2+4x}{x(1+x)(1-x)\tan y}$ and the curve passes through the point $\left(\frac{1}{2}, \frac{1}{4}\pi\right)$.

(b) Show that the equation of the curve can be written in the form $\cos y = f(x)$, where $f(x)$ is fully simplified. **[7]**