9 The equation of a curve is $y = \dfrac{e^{-3x+2}}{x+1}$ where $x < -1$.

(a) Show that $\dfrac{dy}{dx} = \dfrac{e^{-3x+2}}{(x+1)^2}(Ax+B)$ where A and B are integers to be found. [5]

(b) Hence show that there is only one stationary point on the curve and find its exact coordinates. [3]

DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN

10 **(a)** The 3rd and 8th terms of a geometric progression are 6 and 1458 respectively. Find the common ratio and the first term of this progression. [4]

(b) The first 3 terms of a second geometric progression are $\cos\theta$, $2\cos^2\theta$, $4\cos^3\theta$, where $-90° < \theta < 90°$. Find the values of θ for which this geometric progression has a sum to infinity. [4]

DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN
DO NOT WRITE IN THIS MARGIN