3 Find the values of k for which the equation $x^2 + (k+9)x + 9 = 0$ has two distinct real roots. [4]

4 It is given that $y = \ln(1 + \sin x)$ for $0 < x < \pi$.

(a) Find $\frac{\mathrm{d}y}{\mathrm{d}x}$. [2]

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