11 The equation of a curve is $y = kx^{\frac{1}{2}} - 4x^2 + 2$, where k is a constant.

(a) Find $\frac{dy}{dx}$ and $\frac{d^2y}{dx^2}$ in terms of k. [2]

.....

.....

.....

.....

.....

.....

(b) It is given that $k = 2$.

Find the coordinates of the stationary point and determine its nature. [4]

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

(c) Points A and B on the curve have x-coordinates 0.25 and 1 respectively. For a different value of k, the tangents to the curve at the points A and B meet at a point with x-coordinate 0.6.

Find this value of k. [6]