

- 10** A curve has equation  $y = f(x)$  and it is given that

$$f'(x) = \left(\frac{1}{2}x + k\right)^{-2} - (1 + k)^{-2},$$

where  $k$  is a constant. The curve has a minimum point at  $x = 2$ .

- (a)** Find  $f''(x)$  in terms of  $k$  and  $x$ , and hence find the set of possible values of  $k$ . [3]

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It is now given that  $k = -3$  and the minimum point is at  $(2, 3\frac{1}{2})$ .

- (b)** Find  $f(x)$ . [4]

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[illegible]

- (c) Find the coordinates of the other stationary point and determine its nature. [4]

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