

7 The function  $f$  is defined for  $x \geq 0$  by  $f(x) = (4x + 1)^{\frac{3}{2}}$ .

(i) Find  $f'(x)$  and  $f''(x)$ .

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The first, second and third terms of a geometric progression are respectively  $f(2)$ ,  $f'(2)$  and  $kf''(2)$ .

(ii) Find the value of the constant  $k$ .

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