2. The curve C has equation

$$y = 2x^{\frac{5}{2}} - 4x + 3$$

(a) Find $\dfrac{\mathrm{d}y}{\mathrm{d}x}$ writing your answer in simplest form.

(2)

The point P lies on C.

Given that

- the x coordinate of P is 2^k where k is a constant
- the gradient of C at the point P is 16

(b) find the value of k.

(3)

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Question 2 continued

(Total for Question 2 is 5 marks)

3. Find

$$\int \frac{(x+3)^2}{3\sqrt{x}}\,\mathrm{d}x$$

writing your answer in simplest form.

(5)

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