

# Chapter 9: Integration

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9. (i) Find

$$\int \frac{(3x + 2)^2}{4\sqrt{x}} dx \quad x > 0$$

giving your answer in simplest form.

(5)

(ii) A curve  $C$  has equation  $y = f(x)$ .

Given

- $f'(x) = x^2 + ax + b$  where  $a$  and  $b$  are constants
- the  $y$  intercept of  $C$  is  $-8$
- the point  $P(3, -2)$  lies on  $C$
- the gradient of  $C$  at  $P$  is  $2$

find, in simplest form,  $f(x)$ .

(6)

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