

The polynomial  $p(x)$  is defined by

$$p(x) = 4x^3 + 16x^2 + 9x - 15.$$

- (a) Find the quotient when  $p(x)$  is divided by  $(2x + 3)$ , and show that the remainder is  $-6$ . [3]

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- (b)** Find  $\int \frac{p(x)}{2x+3} dx$ . [2]

[illegible]

- (c)** Factorise  $p(x) + 6$  completely and hence solve the equation

$$p(\operatorname{cosec} 2\theta) + 6 = 0$$

for  $0^\circ < \theta < 135^\circ$ .

[5]

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