

8. (a) Find the first four terms, in ascending powers of x , of the binomial expansion of

$$(2 + 3x)^6$$

simplifying each term.

(4)

- (b) Hence, without further calculation, write down the first four terms in the binomial expansion of

$$(2 - 3x)^6$$

(1)

- (c) Hence, find the first two non-zero terms in the binomial expansion of

$$\left[(2 + 3x)^6 + (2 - 3x)^6 \right]^2$$

(2)

- (d) Find the term that is independent of x in the binomial expansion of

$$\left[(2 + ax)^n + (2 - ax)^n \right]^p$$

giving your answer in the form 2^y , where y is in terms of n and p

(2)