Chapter 11 Series Part 1

1. The first 3 terms in the expansion of $(3 - ax)^5$, in ascending powers of x, can be written in the form $b - 81x + cx^2$. Find the value of each of a, b and c.

[5]

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2. (a) Find the first 3 terms in the expansion of $(4 - \frac{x}{16})^6$ in ascending powers of x.
Give each term in its simplest form.

[3]

(b) Hence find the term independent of x in the expansion of $(4 - \frac{x}{16})^6(x - \frac{1}{x})^2$.

[3]

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3. (a) Expand $(2 - x)^5$, simplifying each coefficient.

[3]

(b) Hence solve $\dfrac{e^{(2-x)^5} \times e^{80x}}{e^{10x^4+32}} = e^{-x^5}$.

[4]

4. **DO NOT USE A CALCULATOR IN THIS QUESTION.**

(a) Find the term independent of x in the binomial expansion of $(3x - \frac{1}{x})^6$.

[2]

(b) In the expansion of $(1 + \frac{x}{2})^n$ t the coefficient of x^4 is half the coefficient of x^6. Find the value of the positive constant n.

[6]

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5. Find the coefficient of x^2 in the expansion of $(x - \frac{3}{x})(x + \frac{2}{x})^5$.

[5]

6. Given that the coefficient of x^2 in the expansion of $(1 + x)(1 - \frac{x}{2})^n$ is $\frac{25}{4}$, find the value of the positive integer n.

[5]

7. The first three terms in the expansion of $(a + bx)^5(1 + x)$ are $32 - 208x + cx^2$.
Find the value of each of the integers a, b and c.

[7]