BINOMIAL EXPANSION

O/N/2006/Q1

Find the coefficient of x^2 in the expansion of $\left(x + \frac{2}{x}\right)^6$. [3]

O/N/2008/Q1

Find the value of the coefficient of x^2 in the expansion of $\left(\frac{x}{2} + \frac{2}{x}\right)^6$. [3]

M/J/2019/Q1

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

O/N/2018/Q1

Find the coefficient of $\frac{1}{x^2}$ in the expansion of $\left(3x + \frac{2}{3x^2}\right)^7$. [4]

O/N/2017/Q1

Find the term independent of x in the expansion of $\left(2x - \frac{1}{4x^2}\right)^9$. [4]

M/J/2015/Q3

(i) Find the coefficients of x^2 and x^3 in the expansion of $(2 - x)^6$. [3]

(ii) Find the coefficient of x^3 in the expansion of $(3x + 1)(2 - x)^6$. [2]

M/J/2017/Q1

(i) Find the coefficient of x in the expansion of $\left(2x - \frac{1}{x}\right)^5$. [2]

(ii) Hence find the coefficient of x in the expansion of $(1 + 3x^2)\left(2x - \frac{1}{x}\right)^5$. [4]

M/J/2020/Q1

(a) Find the coefficient of x^2 in the expansion of $\left(x - \frac{2}{x}\right)^6$. [2]

(b) Find the coefficient of x^2 in the expansion of $(2 + 3x^2)\left(x - \frac{2}{x}\right)^6$. [3]

M/J/2014/Q2

Find the coefficient of x^2 in the expansion of $(1+x^2)\left(\frac{x}{2}-\frac{4}{x}\right)^6$. [5]

M/J/2013/Q2

Find the coefficient of x^2 in the expansion of

(i) $\left(2x-\frac{1}{2x}\right)^6$, [2]

(ii) $(1+x^2)\left(2x-\frac{1}{2x}\right)^6$. [3]

M/J/2016/Q4

Find the term that is independent of x in the expansion of

(i) $\left(x-\frac{2}{x}\right)^6$, [2]

(ii) $\left(2+\frac{3}{x^2}\right)\left(x-\frac{2}{x}\right)^6$. [4]

O/N/2010/Q1

(i) Find the first 3 terms in the expansion, in ascending powers of x, of $(1-2x^2)^8$. [2]

(ii) Find the coefficient of x^4 in the expansion of $(2-x^2)(1-2x^2)^8$. [2]

M/J/2008/Q3

(i) Find the first 3 terms in the expansion, in ascending powers of x, of $(2 + x^2)^5$. [3]

(ii) Hence find the coefficient of x^4 in the expansion of $(1 + x^2)^2(2 + x^2)^5$. [3]

M/J/2005/Q4

(i) Find the first 3 terms in the expansion of $(2 - x)^6$ in ascending powers of x. [3]

(ii) Find the value of k for which there is no term in x^2 in the expansion of $(1 + kx)(2 - x)^6$. [2]

O/N/2012/Q1

In the expansion of $\left(x^2 - \frac{a}{x}\right)^7$, the coefficient of x^5 is -280. Find the value of the constant a. [3]

O/N/2015/Q2

In the expansion of $(x + 2k)^7$, where k is a non-zero constant, the coefficients of x^4 and x^5 are equal. Find the value of k. [4]

M/J/2018/Q1

The coefficient of x^2 in the expansion of $\left(2+\frac{x}{2}\right)^6+(a+x)^5$ is 330. Find the value of the constant a. [5]

M/J/2012/Q3

The coefficient of x^3 in the expansion of $(a+x)^5+(2-x)^6$ is 90. Find the value of the positive constant a. [5]

M/J/2011/Q2

(i) Find the terms in x^2 and x^3 in the expansion of $\left(1 - \frac{3}{2}x\right)^6$. [3]

(ii) Given that there is no term in x^3 in the expansion of $(k + 2x)\left(1 - \frac{3}{2}x\right)^6$, find the value of the constant k. [2]

O/N/2009/Q2

(i) Find, in terms of the non-zero constant k, the first 4 terms in the expansion of $(k + x)^8$ in ascending powers of x. [3]

(ii) Given that the coefficients of x^2 and x^3 in this expansion are equal, find the value of k. [2]

O/N/2020/Q1

The coefficient of x^3 in the expansion of $(1 + kx)(1 - 2x)^5$ is 20.

Find the value of the constant k. [4]

O/N/2016/Q4

In the expansion of $(3 - 2x)\left(1 + \frac{x}{2}\right)^n$, the coefficient of x is 7. Find the value of the constant n and hence find the coefficient of x^2. [6]

M/J/2009/Q3

(i) Find the first 3 terms in the expansion of $(2 + 3x)^5$ in ascending powers of x. [3]

(ii) Hence find the value of the constant a for which there is no term in x^2 in the expansion of $(1 + ax)(2 + 3x)^5$. [2]

O/N/2011/Q1

(i) Find the first 3 terms in the expansion of $(2 - y)^5$ in ascending powers of y. [2]

(ii) Use the result in part **(i)** to find the coefficient of x^2 in the expansion of $\left(2 - (2x - x^2)\right)^5$. [3]

O/N/2014/Q3

(i) Find the first 3 terms, in ascending powers of x, in the expansion of $(1+x)^5$. [2]

The coefficient of x^2 in the expansion of $\left(1+(px+x^2)\right)^5$ is 95.

(ii) Use the answer to part **(i)** to find the value of the positive constant p. [3]

O/N/2007/Q3

(i) Find the first three terms in the expansion of $(2+u)^5$ in ascending powers of u. [3]

(ii) Use the substitution $u = x + x^2$ in your answer to part **(i)** to find the coefficient of x^2 in the expansion of $\left(2+x+x^2\right)^5$. [2]

M/J/2006/Q4

The first three terms in the expansion of $(2 + ax)^n$, in ascending powers of x, are $32 - 40x + bx^2$. Find the values of the constants n, a and b. [5]