Binomial Theorem Worksheet 3

1. Find the coefficient of x^4 in the expansion of $(1 + x + x^2 + x^3)^{11}$.
2. Find a positive value of m for which the coefficient of x^2 in the expansion $(1 + x)^m$ is 6.
3. Find the coefficient of x in the expansion of $(1 – 3x + 7x^2) (1 – x)^{16}$.
4. Find the coefficient of a^3 in the product $(1 + 2a)^4 (2 – a)^5$ using binomial theorem.
5. Find a, b and n in the expansion of $(a + b)^n$ if the first three terms of the expansion are 729, 7290 and 30375, respectively.
6. Find the coefficient of x^{50} after simplifying and collecting the like terms in the expansion of $(1 + x)^{1000} + x(1 + x)^{999} + x^2(1 + x)^{998} + ... + x^{1000}$
7. If the coefficients of (r – 5)th and (2r – 1)th terms in the expansion of $(1 + x)^{34}$ are equal, find r.
8. Find the coefficient of x^{11} in the expansion of $[x^3 - (2/x^2)]^{12}$.
9. Find the coefficients of x and x^{-9} in $[2x^3 – (3/x)]^7$.
10. Find the exact value of $(1 − 0.1)^4$ without the use of a calculator and verify your answer with a calculator.