# SATPREP

**Assignment: Binomial Theorem**

**1.** Find the coefficient of $x^5$ in the expansion of $(3x - 2)^8$

**2.** Find the coefficient of $a^5b^7$ in the expansion of $(a + b)^{12}$.

**3.** Complete the following expansion.

$(2 + ax)^4 = 16 + 32ax + \ldots$

**4.** Find the coefficient of $x^3$ in the binomial expansion of $\left(1 - \frac{1}{2}x\right)^8$.

**5.** The coefficient of $x$ in the expansion of $\left(x + \frac{1}{ax^2}\right)^7$ is $\frac{7}{3}$. Find the possible values of $a$.

**6.** Consider the expansion of $(x^2 - 2)^5$.

(a) Write down the number of terms in this expansion.

(b) The first four terms of the expansion in descending powers of $x$ are

$$x^{10} - 10x^8 + 40x^6 + Ax^4 + \ldots$$

Find the value of $A$.

**7.** Determine the constant term in the expansion of $\left(x - \frac{2}{x^2}\right)^9$.

**8.** Find the term containing $x^{10}$ in the expansion of $(5 + 2x^2)^7$.

**9.** Consider the expansion of $\left(3x^2 - \frac{1}{x}\right)^9$.

(a) How many terms are there in this expansion?

(b) Find the constant term in this expansion.