1. In the expansion of $\left(3x^2 — \frac{2}{x}\right)^{12}$ find

   a) The constant term
   b) The coefficient of x^6
   c) The first three terms in descending order

2. In the expansion of $\left(3x^3 — \frac{2}{x}\right)^{12}$ find

   a) The constant term
   b) The coefficient of x^4
   c) The first three terms in descending order

3. In the binomial expansion of $(a + x)^n$, where $n \geq 4$, the coefficient of x^3 is twice the coefficient of x^4.

   a) Show that $n=2a+3$
   b) Given that a = 3, find the coefficients of x^3 and x^4..

4. Let $S = a+b$ and $P=ab$.Express in terms of S and P the following

   (a) $a^2 + b^2$
   (b) $a^3 + b^3$
   (c) $a^4 + b^4$

5. Express

(a) $(\sqrt{3}+\sqrt{2})^3$ in the form of $a\sqrt{3}+b\sqrt{2}$, where a and $b \in \mathrm{Z}$

(b) $(\sqrt{3}+\sqrt{2})^3$ in the form of $a+b\sqrt{6}$, where a and $b \in \mathrm{Z}$