EXERCISE 7.1

Expand each of the expressions in Exercises 1 to 5.

1. $(1-2x)^5$

2. $\left(\dfrac{2}{x} - \dfrac{x}{2}\right)^5$

3. $(2x - 3)^6$

4. $\left(\dfrac{x}{3}+\dfrac{1}{x}\right)^5$ **5.** $\left(x+\dfrac{1}{x}\right)^6$

Using binomial theorem, evaluate each of the following:

  6. $(96)^3$ **7.** $(102)^5$ **8.** $(101)^4$

  9. $(99)^5$

10. Using Binomial Theorem, indicate which number is larger $(1.1)^{10000}$ or 1000.

11. Find $(a + b)^4 - (a - b)^4$. Hence, evaluate $(\sqrt{3} +\sqrt{2})^4- (\sqrt{3} - \sqrt{2})^4$.

12. Find $(x + 1)^6 + (x - 1)^6$. Hence or otherwise evaluate $(\sqrt{2} + 1)^6 + (\sqrt{2} - 1)^6$.

13. Show that $9^{n+1} - 8n - 9$ is divisible by 64, whenever n is a positive integer.

14. Prove that $\displaystyle\sum_{r=0}^{n} 3^r \; {}^n C_r = 4^n$.