

1. Binomial expansion

1. a) Using binomial expansion, determine the first five terms of the expansion: $(2 - \frac{1}{x})^8$ (2mks)
- b) Use the expansion above to evaluate $(1.75)^8$ (2mks)
2. (a) Expand and simplify the binomial expression $(2 + x)^5$ upto the term in x^3 . (2mks)
- (b) Use your expression to estimate $(1.97)^5$ correct to 4 s.f. (2mks)
3. (a) Expand $\left[\quad \right]^5$
- (b) use your expansion to estimate the value of $\left[\quad \right]$ Correct to 4 d.p.
4. (i) Expand $\left[\quad \right]$ upto the term in X^3
- (ii) Use your expansion to estimate the value of $\left[\quad \right]^6$ correct to one decimal place
5. (a) Expand $(3 + 2x)^6$ up to the fourth term
- (b) Use your expansion to estimate:- $(3\sqrt{3})^6$
6. Two dice are thrown once and their sum noted. Find the probability that the sum is odd
7. Find the length PR in a triangle PQR having $PQ = 12\text{cm}$, $QR = 8.4\text{cm}$ angle $QPR = 35^\circ$ and angle $PRQ = 75^\circ$ leaving your answer correct to decimal places
8. (a) Use binomial expansion to evaluate $(2 + \frac{3}{x})^5$ up to the fifth term
- (b) By expressing 9.5 in the form $(2 + \frac{3}{x})$, use the expansion in (a) above to calculate $(9.5)^5$ correct to 3 d.p.
9. Use the expansion of $(x - 0.2)^5$ to find the exact value of 9.8^5
10. Solve for x in the equation;
 $\log(x + 24) = 2 \log 3 + \log(9 - 2x)$.
11. Expand $\left[\quad \right]$ in ascending powers of x upto the fourth term.
Use the four terms to evaluate $\left[\quad \right]^6$ to 4 decimal places.
12. (a) Expand and simplify the binomial expression $(1 + \frac{1}{2}x)^8$
- (b) Use the expansion up to the fourth term to evaluate $(1.05)^8$ to 2 decimal places
13. Expand $(3 + x)^4$ in ascending powers of x. Use the first three terms of the expansion to evaluate $(3.02)^4$, correct to 3 decimal places