



MATHS

BOOKS - MODERN PUBLICATION

INFINITE SERIES

Example

1. Expand $\left(1 - \frac{x}{2}\right)^{-1/2}$ when $|x| < 2$.



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2. Expand the following : $\frac{1}{\sqrt{5x + 4x}}$, $x < \frac{5}{4}$.



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3. Comment on the binomial series for $(1 + x)^m$ when $x = -2$ and $m = -1$.

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4. Show that $2.6 < e < 3$.

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5. Find the coefficient of x^n in the expansion of e^{a+bx} in powers of x .

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6. Find the coefficient of x^n in the expansion of:
$$\frac{a + bx + cx^2}{e^x}.$$

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7. Find the value of e^2 , rounded off to one decimal place.

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8. Prove that

$$2\log x - \log(x + 1) - \log(x - 1) = \frac{1}{x^2} + \frac{1}{2x^4} + \frac{1}{3x^6} + \dots,$$

where $|x| < 1$.

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9. If α and β are the roots of equation $x^2 - px + q = 0$,

prove

that

:

$$\log(1 + px + qx^2) = (\alpha + \beta)x - \frac{\alpha^2 + \beta^2}{2}x^2 + \frac{\alpha^3 + \beta^3}{3}x^3 - \dots$$

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10. Prove that $\log_{10} 2$ lies between $\frac{1}{3}$ and $\frac{1}{4}$.

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