

- b Hence show that $\frac{28x}{(3x-1)(x+2)} \equiv 4\left[\left(1 + \frac{x}{2}\right)^{-1} - (1-3x)^{-1}\right]$.
- c Show that the x^2 coefficient in the expansion of $\frac{28x}{(3x-1)(x+2)}$ is -35 and find the x^3 coefficient.
- d State the range of values of x for which the expansion is valid.

EXAMINATION EXERCISE 8

- 1 i Expand $(1-2x)^{\frac{1}{2}}$ in ascending powers of x , up to and including the term in x^3 , simplifying the coefficients.
- ii State the set of values of x for which this expansion is valid. [OCR]
- 2 a Obtain the binomial expansion of $(1+x)^{\frac{1}{2}}$ as far as the term in x^2 .
- b i Hence, or otherwise, find the series expansion of $(4+2x)^{\frac{1}{2}}$ as far as the term x^2
- ii Find the range of values of x for which this expansion is valid. [AQA]
- 3 i Expand $(1+4x)^{\frac{1}{2}}$ in ascending powers of x , up to and including the term in x^2 , simplifying the coefficients.
- ii State the set of values of x for which the expansion is valid.
- iii In the expansion of
- $$(1+kx)(1+4x)^{\frac{1}{2}},$$
- the coefficient of x is 7. Find the value of the constant k and hence the coefficient of x^2 . [OCR]
- 4 a Expand $(1+3x)^{-2}$, $|x| < \frac{1}{3}$, in ascending powers of x up to and including the term in x^3 , simplifying each term.
- b Hence, or otherwise, find the first three terms in the expansion of $\frac{x+4}{(1+3x)^2}$ as a series in ascending powers of x . [EDEXCEL]

- 5 Given that

$$\frac{10(2-3x)}{(1-2x)(2+x)} \equiv \frac{A}{1-2x} + \frac{B}{2+x},$$

- a find the values of the constants A and B .
- b Hence, or otherwise, find the series expansion in ascending powers of x , up to and including the term in x^3 , of $\frac{10(2-3x)}{(1-2x)(2+x)}$, for $|x| < \frac{1}{2}$.

[EDEXCEL]