8.3) The binomial expansion

Worked example	Your turn
Use the binomial theorem to find the expansion of $(2-3x)^5$	Use the binomial theorem to find the expansion of $(3-2x)^5$ $243-810x+1080x^2-720x^3+240x^4-32x^5$

Worked example	Your turn
Find the first four terms in ascending powers of x in the binomial expansion of $(1+3x)^{11}$	Find the first four terms in ascending powers of x in the binomial expansion of $(1+2x)^{10}$ $1+20x+180x^2+960x^3+\cdots$

Worked example

Find the first four terms in ascending powers of x in the binomial expansion of

$$\left(6-\frac{1}{3}x\right)^{10}$$

Your turn

Find the first four terms in ascending powers of x in the binomial expansion of

$$\left(10-\frac{1}{2}x\right)^{6}$$

$1000000-300000x+37500x^2-2500x^3+\cdots$

Worked example	Your turn
Find the first 3 terms in the expansion of $\left(3-\frac{1}{2}x\right)^5$, in ascending powers of x.	Find the first 3 terms in the expansion of $\left(2-\frac{1}{3}x\right)^7$, in ascending powers of x. $128-\frac{448}{3}x+\frac{224}{3}x^2+\cdots$

Worked example

Find the binomial expansion of $\left(x + \frac{1}{x}\right)^7$ giving each term in its simplest form

Your turn

Find the binomial expansion of $\left(x + \frac{1}{x}\right)^5$ giving each term in its simplest form

$$x^5 + 5x^3 + 10x + \frac{10}{x} + \frac{5}{x^3} + \frac{1}{x^5}$$