

**Example 6** Determine whether the expansion of  $x^2 - \frac{2}{x}$ <sup>18</sup> will contain a term containing  $x^{10}$ ?

**Solution** Let  $T_{r+1}$  contain  $x^{10}$ . Then

$$\begin{aligned} T_{r+1} &= {}^{18}C_r (x^2)^{18-r} \left(\frac{-2}{x}\right)^r \\ &= {}^{18}C_r x^{36-2r} (-1)^r \cdot 2^r x^{-r} \\ &= (-1)^r 2^r {}^{18}C_r x^{36-3r} \end{aligned}$$

Thus,  $36 - 3r = 10$ , i.e.,  $r = \frac{26}{3}$

