



- 1a. Find the first 4 terms of the expansion of $(1 + \frac{x}{2})^{10}$ in ascending powers of x , giving each term in its simplest form. **(2)**
- b. Use your expansion to estimate the value of $(1.005)^{10}$, giving your answer to 5 decimal places. **(3)**

Solutions

1.

$(1 + \frac{1}{2})^{10} = 1 + \binom{10}{1}(\frac{1}{2}x) + \binom{10}{2}(\frac{1}{2}x)^2 + \binom{10}{3}(\frac{1}{2}x)^3$	M1
$= 1 + 5x + \frac{45}{4}x^2 + 15x^3$	M1

2.

$(1.005)^{10} = (1 + \frac{1}{2} \times 0.01)^{10}$	M1
$= 1 + 5(0.01) + \frac{45}{4}(0.01)^2 + 15(0.01)^3$	M1
$= 1 + 0.05 + 0.001125 + 0.000015$	
$= 1.05114$	M1

