



AEM questions are taken from past exam papers - they have been carefully chosen to represent a typical exam question at each level of difficulty. If you can do these questions, you're ready to move onto past papers for this topic.

APPRENTICE

- a. Use $x = \frac{1}{15}$ in the first three terms of the expansion $(1 + 6x)^{-1} \approx 1 - 6x + 36x^2 + \dots$ to find an approximate value for $\frac{5}{7}$
- b. Find the percentage error in this approximation.

EXPERT

If $x = 1.6$ is used in the first three terms of the expansion $(1 + x)^{10} \approx 1 + 10x + 45x^2 + \dots$, this will not produce a good approximation of 2.6^{10} .

Explain why and suggest an alternative way to use this expansion to find an approximation for 2.6^{10}

MASTER

Choosing a suitable value for x , use the first two terms of the expansion of $\sqrt{3 - 4x}$ to find an approximation for $\sqrt{10}$ in the form $k\sqrt{3}$ where $k \in \mathbb{Q}$.