There are 19 modules in the course, all subdidivided into units

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Every unit is divided into numbered frames which students follow sequentially

Example 1

To solve the cubic equation:

$$2x^3 - 11x^2 + 18x - 8 = 0$$

The first step is to find a linear factor of the cubic expression:

$$f(x) = 2x^3 - 11x^2 + 18x - 8$$

by application of the remainder theorem. To facilitate the calculation, we first write $f(x)$ in nested form:

$$f(x) = [(2x - 11)x + 18]x - 8$$

Now we seek a value for x, $(x = k)$ which gives a zero remainder on division by $(x - k)$. We therefore evaluate $f(1)$, $f(-1)$, $f(2)\ldots$ etc.

$f(1) = 1 \quad \therefore\ (x - 1)$ is not a factor of $f(x)$

$f(-1) = -39 \quad \therefore\ (x - 1)$ is not a factor of $f(x)$

$f(2) = 0 \quad \therefore\ (x - 2)$ is a factor of $f(x)$

We therefore divide $f(x)$ by $(x - 2)$ to determine the remaining factor, which is .....

Even when introducing new maths, the student is encouraged to do the bits they already can

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Wherever there are dots at the end of a frame, the student has to calculate the answer. It is this active engagement which makes learning so successful

$2x^2 - 7x + 4$

Because

$$\begin{array}{r|l} & 2x^2 - 7x + 4 \\ \hline x - 2 & 2x^3 - 11x^2 + 18x - 8 \\ & \underline{2x^3 - 4x^2} \\ & \quad -7x^2 + 18x \\ & \quad \underline{-7x^2 + 14x} \\ & \qquad\qquad 4x - 8 \\ & \qquad\qquad \underline{4x - 8} \\ & \qquad\qquad\quad 0 \end{array}$$

Every time the answer is given but always with a full explanation to check understanding

$\therefore\ f(x) = (x - 2)(2x^2 - 7x + 4)$ and the cubic equation is now written:

$$(x - 2)(2x^2 - 7x + 4) = 0$$

which gives $x - 2 = 0$ or $2x^2 - 7x + 4 = 0$.

$\therefore\ x = 2$ and the quadratic equation can be solved in the usual way giving $x =$ ..... or $x =$ .....