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$x = 0{\cdot}719$ or $x = 2{\cdot}781$

Here's the answer

$$2x^2 - 7x + 4 = 0 \quad \therefore \quad x = \frac{7 \pm \sqrt{49 - 32}}{4} = \frac{7 \pm \sqrt{17}}{4} = \frac{7 \pm 4{\cdot}1231}{4}$$

$$= \frac{2{\cdot}8769}{4} \text{ or } \frac{11{\cdot}1231}{4}$$

$$\therefore \quad x = 0{\cdot}719 \text{ or } x = 2{\cdot}781$$

Again, here's the working

$$\therefore \quad 2x^3 - 11x^2 + 18x - 8 = 0 \text{ has the solutions}$$

$$x = 2, \; x = 0{\cdot}719, \; x = 2{\cdot}781$$

The whole method depends on the given expression in the equation having at least one linear factor.

Here is another.

This time more is expected of the student - the structure is still there but there is less support needed

### Example 2

Solve the equation $3x^3 + 12x^2 + 13x + 4 = 0$

First, in nested form $f(x) = \ldots\ldots\ldots\ldots$

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$f(x) = [(3x + 12)x + 13]x + 4$

Now evaluate $f(1), f(-1), f(2), \ldots$

$f(1) = 32 \quad \therefore \; (x - 1)$ is not a factor of $f(x)$

$f(-1) = \ldots\ldots\ldots\ldots$

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$f(-1) = 0$

$\therefore \; (x + 1)$ is a factor of $f(x)$. Then, by long division, the remaining factor of $f(x)$ is $\ldots\ldots\ldots\ldots$

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$3x^2 + 9x + 4$

$\therefore$ The equation $3x^3 + 12x^2 + 13x + 4 = 0$ can be written

$$(x + 1)(3x^2 + 9x + 4) = 0$$

so that $x + 1 = 0$ or $3x^2 + 9x + 4 = 0$

which gives $x = -1$ or $x = \ldots\ldots\ldots\ldots$ or $x = \ldots\ldots\ldots\ldots$

On the next page the student is asked to do one without the 'scaffolding' but still with a full worked solution. Through this active engagement the student succeeds