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| **Solving Harder Quadratic Equations in Context** |
| **(a)** | **(b)** |
| The shape shown has an area of $13 cm^{2}$. All lengths on the diagram are in cm. (i) Show that $5x^{2}+3x-14=0$(ii) Hence, find the value of $x$ and the dimensions of the shape. | The cylinder shown has a total surface area of $78π cm^{2}$. All lengths on the diagram are in centimetres.(i) Show that $4x^{2}-x-39=0$(ii) Hence, find the value of $x$ and the height of the cylinder. |
| **(c)** | **(d)** |
| The trapezium shown has an area of $30 cm^{2}$. All lengths on the diagram are in centimetres.(i) Show that $6x^{2}+5x-34=0$(ii) Hence, find the value of $x$ and the dimensions of the trapezium. | A right-angled triangle has sides of lengths $\left(x+1\right) cm, \left(3x-2\right) cm $and $\left(4x-3\right) cm$ as shown. (i) Show that $3x^{2}-7x+2=0$(ii) Hence find the value of $x$ and the length of the hypotenuse. |