M1.$(x − 3)(x + 3)$

> *Substitutes any value for x into both expressions but not $x = 0$*

M1

$(x − 3)(x + 5)$

> *Sets up a correct equation in b*

M1dep

$(b =)$ 2 or $x^2 + 2x − 15$

A1

[3]

M2.

(a) $(c + 4)(c + 1)$ **or** $3(c + 1)$

> *Correct factorisation*

M1

$$\frac{(c+4)(c+1)}{3(c+1)} = \frac{c+4}{3}$$

> *Must be a fraction and completed to* $\frac{c+4}{3}$

A1

Correctly converts to a common denominator

e.g. 1 $\dfrac{2(c+4)}{6} + \dfrac{3-2c}{6}$

e.g. 2 $\dfrac{6(c+4)}{18} + \dfrac{3(3-2c)}{18}$

M2 $\dfrac{2c}{6} + \dfrac{8}{6} + \dfrac{3}{6} + \dfrac{2c}{6}$

M1

(b)   Correctly expands their brackets (must have common denominator)

$$\frac{2c+8+3-2c}{6} \quad \textbf{or}$$

$$\frac{2c+8}{6} + \frac{3-2c}{6}$$

Allow M1 if their first line of working is

$$\frac{2c+4+3-2c}{6} \quad \textbf{or} \quad \frac{2c+4}{6} + \frac{3-2c}{6}$$

M1

$$\frac{11}{6} \quad \textbf{or} \quad 1\frac{5}{6} \quad \textbf{or} \quad 1.833\,(....).$$

$$\frac{33}{18}\,\text{A 0} \quad \frac{5.5}{3}\,\text{A 0} \quad \frac{8+3}{6}\,\text{A 0}$$

A1

Alternative method
Correctly converts to a common denominator

$$\text{e.g. } \frac{6(c^2+5c+4)}{6(3c+3)} + \frac{(3-2c)(3c+3)}{6(3c+3)}$$

oe

May also expand the denominator

M1

Correctly expands their brackets (must have common denominator)

$$\frac{6c^2+30c+24+9c+9-6c^2-6c}{6(3c+3)} \quad \textbf{or}$$

$$\frac{6c^2+30c+24}{6(3c+3)} + \frac{9c+9-6c^2-6c}{6(3c+3)}$$

oe

May also expand the denominator

M1

$$\frac{11}{6} \quad \textbf{or} \quad 1\frac{5}{6} \quad \textbf{or} \quad 1.833\,(....).$$

$$\frac{33}{18}\,\text{A 0} \quad \frac{5.5}{3}\,\text{A 0} \quad \frac{8+3}{6}\,\text{A 0}$$

A1

[5]

M3. $c^2 = 16$ or $c = 4$ or $c = -4$

M1

$$3x^2 + 3cx + cx + c^2 \ (= 3x^2 - dx + 16)$$

$$3x^2 + 12x + 4x + 16 \text{ or } 3x^2 - 12x - 4x + 16 \text{ oe}$$

M1

$c = 4$ **and** $c = -4$ or $4c = -d$ or $16 = -d$ or $-16 = -d$
oe

M1

$c = 4$ and $d = -16$ **or** $c = -4$ and $d = 16$
One pair of answers or all four answers seen but not paired

A1

$c = 4$ and $d = -16$ **and** $c = -4$ and $d = 16$
Both pairs of answers must be correctly paired
*SC3 for one correct pair or both correct pairs or all four answers seen but not paired from **no** working*

A1

[5]