M1. $x^2 - cx - cx + c^2$

or $x^2 - 2cx + c^2$

or $a = c^2$

or $12 = 2c$

or $12x = 2cx$

or $-12x = -2cx$

M1

$c = 6$

A1

$a = 36$

ft their c^2

A1ft

Alternative Method

$(x - 6)^2 + a - 36$

M1

$c = 6$

A1

$a = 36$

ft their c^2

A1ft

[3]

M2. use of $(x - 4)^2$

M1

$(x - 4)^2 - 16$ (+ 20)

A1

$(x - 4)^2 - 16 + 20 = (x - 4)^2 + 4$

Strand (ii)

Complete and correct algebraic explanation

Q1

Alternative method 1

use of $(x - 4)^2$

M1

$= x^2 - 8x + 16$

A1

$(x - 4)^2 + 4 = x^2 - 8x + 20$

Strand (ii)

Complete and correct algebraic explanation

Q1

Alternative method 2

$x^2 - ax - ax + a^2$ $(+a)$

M1

$a = 4$

A1

Also $4^2 + 4 = 20$

Strand (ii)

Complete and correct algebraic explanation

Q1

(b) explains that a square is always positive (or zero) *oe*

B1

and a positive number is added so is always positive *oe*

B1

[5]

M3. $x^2 - 7x - 7x + 49\ (-a)$ or $x^2 - 14x + 49\ (-a)$

M1

$a = -14$

$a = -14$ from no working or an error in the number term of the expansion implies M1 A1

A1

$b = 63$

ft for b = 35 from a = 14, if M mark earned

A1 ft

Alternative method

Substitutes a value for x in the identity eg $x = -1$ gives $b = 63$

M1

$a = -14$

A1

$b = 63$

A1

[3]