

$$7(i) (a-b)x + (a+b)y = a^2 - 2ab - b^2 \dots (i)$$

$$(a+b)(x+y) = a^2 + b^2$$

$$\Rightarrow (a+b)x + (a+b)y = a^2 + b^2 \dots (ii)$$

$$(i) - (ii)$$

$$(a-b)x + (a+b)y = a^2 - 2ab - b^2$$

$$(a+b)x + (a+b)y = a^2 + b^2$$

$$(\cancel{a-b} - \cancel{a+b})x = -2ab - 2b^2$$

$$\Rightarrow -2bx = -2b(a+b)$$

$$\Rightarrow x = a+b$$

Sub (i)

$$(a-b)(a+b) + (a+b)y = a^2 - 2ab - b^2$$

$$\Rightarrow \cancel{a^2} - \cancel{b^2} + (a+b)y = \cancel{a^2} - 2ab - \cancel{b^2}$$

$$\Rightarrow y = \frac{-2ab}{a+b}$$

$$7(ii) 152x - 378y = -74 \dots (i)$$

$$-378x + 152y = -604 \dots (ii)$$

$$(i) + (ii)$$

$$-226x - 226y = -678$$

$$(\div -226)$$

$$x + y = 3 \dots (iii)$$

$$(i) - (ii)$$

$$530x - 530y = 530$$

$$(\div 530) \quad x - y = 1 \dots (iv)$$

$$(iii) + (iv)$$

$$x + y = 3$$

$$x - y = 1$$

$$\hline 2x = 4$$

$$\Rightarrow x = 2$$

Sub (iii)

$$2 + y = 3$$

$$\Rightarrow y = 1$$

$$\therefore x = 2, y = 1$$