#1a

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

$$a^2 + 2ab + b^2$$
$$= 2ab + a^2 + b^2$$ Re-arrange.
$$= 2(6) + 24$$ Substitute known values.
$$= 12 + 24$$
$$= 36$$

$\therefore (a+b)^2 = 36$

#1b

$$(x+y)^2 = 13$$
$$x^2 + 2xy + y^2 = 13$$ Expand.
$$x^2 + y^2 + 2xy = 13$$ Re-arrange.
$$7 + 2xy = 13$$ Substitute known value.
$$2xy = 13 - 7$$
$$2xy = 6$$
$$xy = 3$$

$\therefore xy = 3$

(more on next page.)

#1c

$(j+k)^2$

$= j^2 + 2jk + k^2$

$(j+k)^2 = j^2 + 2jk + k^2$ Re-write as equation.

$(6)^2 = j^2 + k^2 + 2jk$ Substitute known values

$(6)^2 = 52 + 2jk$

$36 - 52 = 2jk$

$-16 = 2jk$

$-8 = jk$ $\therefore jk = -8$

#1d

$(m+n)^2$

part 1 $= m^2 + 2mn + n^2$ Make an expression that gets us m^2+n^2

$= m^2 + n^2 + 2mn$

$= 12 + 2mn$ Substitute known value.

part 2 $(m^2+n^2)^2$

$= (m^2+n^2)(m^2+n^2)$ Make an expression to get m^4+n^4

$= m^4 + m^2n^2 + m^2n^2 + n^4$

$= m^4 + 2m^2n^2 + n^4$

$= m^4 + n^4 + 2m^2n^2$ Substitute known value

$= 136 + 2m^2n^2$

(Continued next page).

part 3 $(m^2+n^2)^2$

$= (12)^2$

$= 144$

Substitute known value.

Back to this... trying to set up an equation.

part 4 $(m^2+n^2)^2 = (m^2+n^2)^2$

$136 + 2m^2n^2 = 144$

$2m^2n^2 = 144 - 36$

$2m^2n^2 = 8$

$m^2n^2 = 4$

Now we have an equation!

Hmm... getting close.

part 5 $(mn)^2 = m^2n^2$

$(mn)^2 = 4$

$\sqrt{(mn)^2} = \sqrt{4}$

$\therefore mn = 2$

or $mn = -2$ $\because (2)^2 = 4$ and $(-2)^2 = 4$

Make an equation that gets us m^2n^2.

Substitute.

IMPORTANT NOTE: part 1 didn't end up being useful. That's ok!

WDYDWYDKWTD

Try something and see where it leads!