The 'Then' in (2) is equivalent to

$a^3y^3 - 3a^2y^2x + 3ayx^2 = \dfrac{bz}{x}$, and therefore to

$$3ax^2 - 3a^2xy + a^3y^2 = \frac{bz}{xy}.$$

The two conditions in (2) are therefore equivalent iff

$$\frac{1}{3a} = \frac{3}{3a^2} = \frac{3}{a^3} = \frac{1}{b}.$$

These lead to $a = 3$ and $b = 9$, as claimed.

We can deduce an analogous result for quadratics, by arguing in the same way. The result is:

$$\text{If } (x+y)^2 = \frac{z}{y} + y^2, \quad \text{then} \quad (4y+x)^2 = \frac{8z}{x} + x^2.$$

This may be stated using radicals as:

$$\text{If } x = -y + \left(\frac{z}{y} + y^2\right)^{1/2}, \quad \text{then } 4y = -x + \left(\frac{8z}{x} + x^2\right)^{1/23}.$$

We leave the proof to the reader.

A Problem in Graph Theory

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A conference of '*n*' leaders is proposed to be held (where '*n*' is an odd number). Suppose that the organisers decide to conduct it in such a way that the leaders will have their dinner together at a circular table and each leader will have different neighbours on each day. Then

1) For how many days will the leaders have to meet to have all combinations and arrangements?

2) How can the leaders be arranged in their position each day?