Think It Over

This section of Resonance presents thought-provoking questions, and discusses answers a few months later. Readers are invited to send new questions, solutions to old ones and comments, to ‘Think It Over’, Resonance, Indian Academy of Sciences, Bangalore 560 080. Items illustrating ideas and concepts will generally be chosen.

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Motion with a Constraint

Problem 1.
Consider a walker $W$ who walks in a big playground such that $W$ is always twice as far from a point $A_1$, as $W$ is from a point $A_2$. Here $A_1$ and $A_2$ are fixed. Find the path traced by the walker $W$.

Problem 2.
Consider a bird $B$ that is flying in space in such a way that it is always three times as far from the top of tower $T_1$ as it is from the top of tower $T_2$. What is the collection of points in space traced by the bird $B$.

Problem 3.
Formulate and solve a generalization of the above two problems to higher dimensions.