

# Math Diversion Problem 71

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Mathematics is the science of the infinite.  
— Augustin-Louis Cauchy

The YouTube video is found at:

Source: [https://www.youtube.com/watch?v=lfxCDP7y\\_D8](https://www.youtube.com/watch?v=lfxCDP7y_D8)

Title: A tricky Solution from Stanford University

Admission Interview

Presenter: Super Academy

## 1 The Problem

Given the relation

$$K^2 = 8i, \tag{1}$$

find the values of  $K$ .

## 2 The Solution

First, let's rearrange (1) to get

$$K^2 = 8e^{\pi i/2}. \tag{2}$$

Therefore,

$$\begin{aligned} K &= \pm\sqrt{8}(e^{\pi i/2})^{1/2} \\ &= \pm 2\sqrt{2}e^{\pi i/4} \\ &= \pm 2\sqrt{2} \frac{1}{\sqrt{2}}(1+i) \\ &= \pm 2(1+i). \end{aligned} \tag{3}$$