General approach to proving irrationality

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1 Proof $\sqrt{3}$ is irrational

Once again, let us first define what a rational number is:

$$\text{A number r is rational if } r = \frac{p}{q} \quad \text{where} \quad p, q \in \mathbb{Z} \text{ and } q \neq 0 \tag{1}$$

Now, assuming $\sqrt{3}$ is a rational number leads us to $\sqrt{3} = \frac{p}{q} \ \therefore \ p^2 = 3q^2$ Skibidi