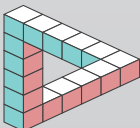


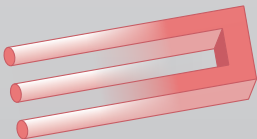
$$\begin{aligned}
 a &= b \neq 0 \\
 a \times a &= a^2 = b \times a \\
 a^2 - b^2 &= b \times a - b^2 \\
 (a + b) \times (a - b) &= b \times (a - b) \\
 a + b &= b \\
 2 \times b &= b
 \end{aligned}$$

2 = 1



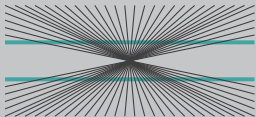
$$\begin{aligned}
 1 &= \sqrt{(-1) \times (-1)} = \sqrt{-1} \times \sqrt{-1} \\
 &= i \times i = i^2 = -1
 \end{aligned}$$

1 = -1



$$\begin{aligned}
 1 &= x - x^2 \Leftrightarrow 1 = x + \frac{1}{x} \\
 \Rightarrow x - x^2 &= x + \frac{1}{x} \\
 \Rightarrow -x^2 &= \frac{1}{x} \Rightarrow x^3 = -1 \\
 \Rightarrow x &= -1
 \end{aligned}$$

1 = (-1) - (-1)^2 = -2

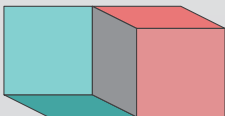


$$\begin{aligned}
 S &= 1 - \frac{1}{2} + \frac{1}{3} - \frac{1}{4} + \frac{1}{5} - \frac{1}{6} + \dots \\
 &= (1 - \frac{1}{2}) + (\frac{1}{3} - \frac{1}{4}) + \dots > 0
 \end{aligned}$$

$$\begin{aligned}
 S &= (1 - \frac{1}{2}) - \frac{1}{4} + (\frac{1}{3} - \frac{1}{6}) - \frac{1}{8} \\
 &\quad + (\frac{1}{5} - \frac{1}{10}) - \frac{1}{12} + \dots \\
 &= \frac{1}{2} - \frac{1}{4} + \frac{1}{6} - \frac{1}{8} + \dots = \frac{1}{2} S
 \end{aligned}$$

$$S = \frac{1}{2} S \Rightarrow S = 0$$

0 > 0



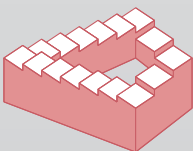
$$4 - 10 = 9 - 15$$

$$4 - 10 + \frac{25}{4} = 9 - 15 + \frac{25}{4}$$

$$\left(2 - \frac{5}{2}\right)^2 = \left(3 - \frac{5}{2}\right)^2$$

$$2 - \frac{5}{2} = 3 - \frac{5}{2}$$

$$\mathbf{2 = 3}$$

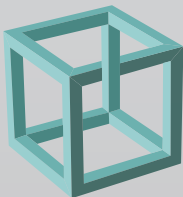


$$\frac{1}{8} < \frac{1}{4} \Rightarrow \left(\frac{1}{2}\right)^3 < \left(\frac{1}{2}\right)^2$$

$$\Rightarrow \log\left(\frac{1}{2}\right)^3 < \log\left(\frac{1}{2}\right)^2$$

$$\Rightarrow 3 \times \log\left(\frac{1}{2}\right) < 2 \times \log\left(\frac{1}{2}\right)$$

$$\mathbf{3 < 2}$$



$$\int u \, dv = uv - \int v \, du$$

$$u = f(x), \quad v = -\frac{1}{f(x)},$$

$$du = f'(x) \, dx, \quad dv = \frac{f'(x)}{(f(x))^2} \, dx$$

$$\int \frac{f'(x)}{f(x)} \, dx = \int f(x) \frac{f'(x)}{(f(x))^2} \, dx$$

$$= -1 + \int \frac{f'(x)}{f(x)} \, dx$$

$$\mathbf{0 = -1}$$

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