$$
\begin{array}{lcll}
e^{ix} & = & i\cos x + i\sin x & \text{\# Euler's formula} \\
& \Rightarrow & e^{i\frac{\pi}{2}} = \cos\frac{\pi}{2} + i\sin\frac{\pi}{2} & \text{\# set } x = \frac{\pi}{2} \\
& \Rightarrow & e^{i\frac{\pi}{2}} = 0 + i \cdot 1 & \text{\# trig} \\
& \Rightarrow & e^{i\frac{\pi}{2}} = i & \text{\# simplify} \\
& \Rightarrow & (e^{i\frac{\pi}{2}})^i = i^i & \text{\# raise both sides to } i \\
& \Rightarrow & e^{\frac{i^2\pi}{2}} = i^i & \text{\# } (x^m)^n = x^{mn} \\
& \Rightarrow & e^{-\frac{\pi}{2}} = i^i & \text{\# } i^2 = -1 \\
& \Rightarrow & e^{-\frac{\pi}{2}} \text{ is real} \Rightarrow i^i \text{ is a real number} &
\end{array}
$$