

e^{ix}	$=$	$i \cos x + i \sin x$	# Euler's formula
\Rightarrow	$e^{i\frac{\pi}{2}}$	$= \cos \frac{\pi}{2} + i \sin \frac{\pi}{2}$	# set $x = \frac{\pi}{2}$
\Rightarrow	$e^{i\frac{\pi}{2}}$	$= 0 + i \cdot 1$	# trig
\Rightarrow	$e^{i\frac{\pi}{2}}$	$= i$	# simplify
\Rightarrow	$(e^{i\frac{\pi}{2}})^i$	$= i^i$	# raise both sides to i
\Rightarrow	$e^{\frac{i^2\pi}{2}}$	$= i^i$	# algebra
\Rightarrow	$e^{-\frac{\pi}{2}}$	$= i^i$	# $i^2 = -1$
\Rightarrow	$e^{-\frac{\pi}{2}}$	is real $\Rightarrow i^i$	is a real number