Practice Exercise For Lecture 7

Q1.   Solve the equation: $e^{2ix} = 0 + i0$, where $x \in \mathbb{R}$.

(Ans. $x = (2n+1)\dfrac{\pi}{4}$ and $x = \dfrac{n\pi}{2}$, $n \in \mathbb{Z}$.)

Q2.   Show that the period of e^{2ix} is $2\pi i$, where $x \in \mathbb{R}$.

Q3.   If $z_1 = x_1 + iy_1$ and $z_2 = x_2 + iy_2 \in \mathbb{C}$, then show that;

$e^{z_1} e^{z_2} = e^{x_1 + x_2} \left[\cos(y_1 + y_2) + i \sin(y_1 + y_2) \right]$.

Q4.   Show that $\left| e^{iz} \right| = e^{-y}$, for $z = (x + iy) \in \mathbb{C}$.