$e^{2z} = 2i$

$e^{2(x+yi)} = 2i$

$e^{2x+2yi} = 2i$

$e^{2x}(\cos 2y + i\sin 2y) = 2i$

$e^{2x}\cos 2y + ie^{2x}\sin 2y = 2i$

$e^{2x}\cos 2y = 0$ $\quad$ $e^{2x}\sin 2y = 2$

$e^{2x} > 0$ więc $\cos 2y = 0$

$\cos 2y = 0$

$2y = \frac{\pi}{2} + k\pi$

$y = \frac{\pi}{4} + \frac{k\pi}{2}$

$y = \frac{\pi}{4} + \frac{2k\pi}{2}$

$y = \frac{\pi}{4} + k\pi$

$x = \ln\sqrt{2}$

$z = \ln\sqrt{2} + i\left(\frac{\pi}{4} + k\pi\right)$

$e^{2x}\cdot\sin 2\left(\frac{\pi}{4} + \frac{k\pi}{2}\right) = 2$

$e^{2x}\sin\left(\frac{\pi}{2} + k\pi\right) = 2$

dla k parzystych:

$\sin\left(\frac{\pi}{2} + 2k\pi\right) = 1$

$e^{2x} = 2$

$e^{2x} = e^{\ln 2}$

$2x = \ln 2$

$x = \frac{1}{2}\ln 2 = \ln\sqrt{2}$

dla k nieparzystych

$\sin\left(\frac{\pi}{2} + (2k+1)\pi\right) = -1$

$e^{2x}(-1) = 2$

$e^{2x} = -2$ $\quad x \in \emptyset$