Name _____ Date _____

Year Group _____

Find the nth root of the following complex numbers

$\sqrt[n]{z} = \sqrt[n]{r} * \left[\cos\left(\frac{\theta+2\pi k}{n}\right) + i * \sin\left(\frac{\theta+2\pi k}{n}\right)\right]$ $\sqrt[n]{z} = \sqrt[n]{r} * \left[\cos\left(\frac{\theta+360°k}{n}\right) + i * \sin\left(\frac{\theta+360°k}{n}\right)\right]$

1. $x^4 = -256$; use degrees

$r =$ ____ $\theta =$ ____° $n =$ ____

when $k = 0$

Steps => $\sqrt[__]{__} * \left[\cos\left(\frac{__°+360°*__}{__}\right) + i * \sin\left(\frac{__°+360°*__}{__}\right)\right]$

Steps => $__ * \left[\cos\left(\frac{__°}{__}\right) + i * \sin\left(\frac{__°}{__}\right)\right]$

Steps => $__ * [\cos(__°) + i * \sin(__°)]$

Steps => $__ * \left[\frac{\sqrt{__}}{__} + i * \frac{\sqrt{__}}{__}\right]$

Answer => $__ * \sqrt{__}$ ____ ____ $i * \sqrt{__}$

when $k = 1$ => Answer => $__ * \sqrt{__}$ ____ ____ $i * \sqrt{__}$

when $k = 2$ => Answer => $__ * \sqrt{__}$ ____ ____ $i * \sqrt{__}$

when $k = 3$ => Answer => $__ * \sqrt{__}$ ____ ____ $i * \sqrt{__}$

LIVEWORKSHEETS