Name ____________ Date ________

Year Group ________

Use De Moivre's Theorem to transform the complex number to the form a + bi

1. $\left(3+\sqrt{3}i\right)^4$

Find the modulus and the argument

$$a^2+b^2=c^2 \qquad \tan\theta=\frac{b}{a}$$

Steps => $\_\_\_^2+\left(\sqrt{\_\_\_}\right)^2=c^2$ $\qquad \tan\theta=\frac{\sqrt{\_\_\_}}{\_\_\_}$

Steps => $\_\_\_+\_\_\_=c^2$

Steps => $\_\_\_=c^2$ $\qquad \theta=\tan^{-1}\left(\frac{\sqrt{\_\_\_}}{\_\_\_}\right)$

Steps => $c=\_\_\_*\sqrt{\_\_\_}$

Find the modulus and the argument

$$z=r^n*[\cos(n\theta)+i*\sin(n\theta)]$$

Steps => $z=\left(\_\_\_*\sqrt{\_\_\_}\right)^{\_\_}*\left[\cos\left(\_\_\_*\frac{\pi}{\_\_\_}\right)+i*\sin\left(\_\_\_*\frac{\pi}{\_\_\_}\right)\right]$

Steps => $z=\_\_\_*\left[\cos\left(\frac{\_\_\_\pi}{\_\_\_}\right)+i*\sin\left(\frac{\_\_\_\pi}{\_\_\_}\right)\right]$

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

Answer => $z=\_\_\_+\_\_\_i\sqrt{\_\_\_}$