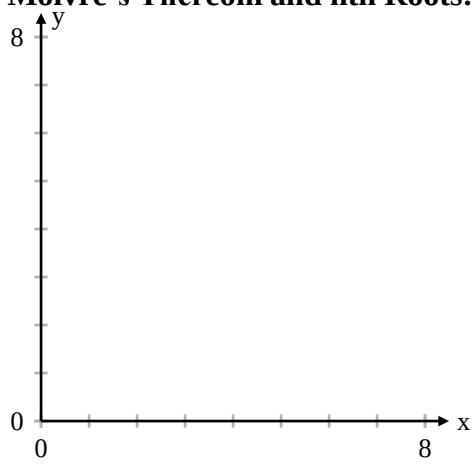
6.6 De Moivre's Thereom and nth Roots: Day 2



Trigonometric Form of a Complex Number

Complex Number: $z = a + bi$

Trig Form:

Where $a =$, $b =$, r = and $\tan\theta =$

Powers of Complex Numbers

Let $z =$, then

$$z^2 = z \bullet z$$

Again let $z =$, then

$$z^3 = z \bullet z^2$$

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De Moivre's Theorem

Let $z_1 = r(\cos\theta + i\sin\theta)$ **and let n be a positive integer. Then**

$$z^n =$$

1. $\dfrac{z_1}{z_2} =$

1. Find the trigonometric form of the complex number where $0 \le \theta < 2\pi$**.**

$$-\frac{\sqrt{3}}{2} - \frac{1}{2}i$$

2. Write the complex number in standard form $a + bi$**.**

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$$5\left(\cos\frac{\pi}{4}+i\sin\frac{\pi}{4}\right)$$

3. Find the product of z_1 and z_2.

$$z_1=\sqrt{2}\left(\cos 118^\circ+i\sin 118^\circ\right)$$
$$z_2=0.5\left(\cos\left(-19^\circ\right)+i\sin\left(-19^\circ\right)\right)$$

4. Find the trigonometric form of the quotient.

$$\frac{5\left(\cos 220^\circ+i\sin 220^\circ\right)}{2\left(\cos 115^\circ+i\sin 115^\circ\right)}$$

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