

Aim: Practice with DeMoivre's Theorem**I. Do Now:**

1. Multiply and simplify:

$$4(\cos 152^\circ + i \sin 152^\circ) \cdot 1.5(\cos 88^\circ + i \sin 88^\circ)$$

2. Divide and simplify:

$$\frac{16(\cos \frac{16\pi}{9} + i \sin \frac{16\pi}{9})}{2(\cos \frac{7\pi}{9} + i \sin \frac{7\pi}{9})}$$

3. Use DeMoivre's Theorem to evaluate:

$$(\sqrt{2} - i\sqrt{2})^8$$

II. More Practice:

4. Evaluate:
- $(1 + i\sqrt{3})^3$

5. Evaluate:
- $(4\sqrt{3} + 4i)^4$

6. Evaluate:
- $(1 - i)^{10}$

7. Evaluate:
- $(\frac{\sqrt{3}}{2} + \frac{1}{2}i)^{15}$

III. Proving DeMoivre Theorem for $n = 2$ and $n = 3$ (if time)

8. If
- $z = r(\cos \theta + i \sin \theta)$
- , show that

$$z^2 = r^2(\cos 2\theta + i \sin 2\theta)$$

9. If
- $z = r(\cos \theta + i \sin \theta)$
- , show that

$$z^3 = r^3(\cos 3\theta + i \sin 3\theta)$$