

Exploring De Moivre's Theorem with DESMOS

Recall De Moivre's Theorem:

If n is an integer, then

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

Go to: <https://www.desmos.com/calculator/igqisujucx>

1. What happens if n is an integer?

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2. What happens if n is rational?

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- (a) Explore what happens when the denominator is a prime number.

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- (b) Explore what happens when the denominator is not prime.

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3. What happens if n is irrational?

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4. What happens if we change r to a number greater than or less than 1?

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