

Notebook
Intro Math Modeling
Math 336
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1. Numbers and radians are dimensionless
2. $e^{i\phi} = \cos\phi + i\sin\phi$ - Euler's equation
3. This ties together the dimensionless of trig, exponential, and logarithmic.
4. radians and degrees(degree for angles) is the only thing that has units but no dimension.
 - (a) Length of arc length (s):
 - (b) $s = \theta r \rightarrow [L] = [\theta][L]$
 - (c) So $[\theta] = 1$, thus proving it dimensionless
5. Pressure is F/A but can be converted to E/V
6. $MLT^{-2}/L^2 = ML^{-1}T^{-2} = M(LT^{-1})^2L^{-3} = [E]/[V]$

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1. A universal math model in Nature - In general, a physical quantity X can be written as the product of powers of all the k relevant quantities X_1, X_2, \dots, X_k as follows:

$$X = \alpha X_1^{n_1} X_2^{n_2} X_3^{n_3} \dots X_k^{n_k},$$

where α is a constant

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- 1.