

**[12-11-28-T11]**

*Notes for second exam on trigonometry*

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Topics include those of the textbook Basic Analysis Chapter 2, complex numbers in polar form, de Moivre's theorem, roots of complex numbers, and applied trigonometry.

- Calculators will be allowed.
- Notes will not be allowed.
- The sheet of basic identities will not be allowed.

- **Solve all varieties of equations that we considered.**
- **Rewrite and work with complex numbers in rectangular and polar forms:**  
 $a + b i, r(\cos \theta + i \sin \theta), r e^{\theta i}$ .
- **Know and use de Moivre's theorem to raise a complex number to an exponent  $n \in \mathbb{Z}^+$ .**
- **Find  $n$   $n^{\text{th}}$  roots of a complex number.**
- **Find the sum of  $a \cos k \theta + b \sin k \theta$ .**
- **Use trigonometric ratios, the law of sines, and the law of cosines to solve practical problems (angles in degrees).**
- **Know and use the relations  $s = r \theta$  and  $A_s = \frac{1}{2} r^2 \theta$ , and  $A_s = \frac{1}{2} r s$ .**