Name: _____ **Date:** _____ **Period:** _____

Precalculus Section 6.5 Review

<u>Formulas to know:</u>

$z = a + bi$ (standard form of complex number)

$z = r(\cos\theta + i\sin\theta)$ (trigonometric form of complex number)

$r = \sqrt{a^2 + b^2}$ $\qquad\qquad \tan\theta = \dfrac{b}{a}$

$z_1 z_2 = r_1 r_2 (\cos(\theta_1 + \theta_2) + i\sin(\theta_1 + \theta_2))$ $\qquad\qquad \dfrac{z_1}{z_2} = \dfrac{r_1}{r_2}(\cos(\theta_1 - \theta_2) + i\sin(\theta_1 - \theta_2))$

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

<u>Objective:</u> To review operations with complex numbers in trigonometric form.

DO NOW:

1. Write in trigonometric form:

  a. $z_1 = 5i$

  b. $z_2 = -3\sqrt{3} - 3i$

  c. $z_3 = 4 + 7i$

2. Find $(z_2)^8$. Write your answer in trigonometric form.

Class practice problems:

1. Graph the complex number and find the trigonometric form: $z = 1 + 3i$

2. Graph the complex number and find the standard form: $z = 3(\cos150° + i\sin150°)$

3. Write in trig form, perform the indicated operation, then check in standard form: $\left(\sqrt{3}+i\right)(1+i)$

4. Use DeMoivre's theorem to find $(2 + 2i)^6$