

Here are some practice problems to help you **begin** to study for the final. (This is not a comprehensive list of problem types!)

- Let $\theta = \frac{7\pi}{6}$
 - Sketch θ in standard position
 - Determine the reference angle θ'
 - Convert θ to degrees
 - Give the exact value of all six trig functions for θ
- Let $\theta = 310^\circ$
 - List a negative coterminal angle between 0 and -360°
 - Convert θ to Radians
- Given $\tan u = \frac{2}{3}$ and $\sin u < 0$, evaluate $\cos u$ and $\sin u$. (Hint: draw a reference triangle in the appropriate quadrant.)
- Let $\cos \theta = \frac{1}{3}$ and $\sin \theta > 0$, find $\sin \theta$ using **trig identities**.
- For $y = -2\sin(3x + \pi) + 3$ determine the following
 - Amplitude
 - Period
 - Phase shift
 - Vertical shift.
- Sketch $y = \csc x$. Determine the period and equations for the asymptotes.
- A guy wire runs from the ground to the top of a 25-foot telephone pole. The angle formed between the wire and the ground is 52° . How far from the base of the pole is the wire attached to the ground.
- Find the area of the sector of a circle with a radius of 18 inches and central angle $\theta = \frac{2\pi}{3}$. (Hint: $A = \frac{1}{2} r^2 \theta$)
- Evaluate the expression
 - $\arccos\left(\frac{-\sqrt{2}}{2}\right)$
 - $\sin\left(\arccos\left(\frac{-2}{3}\right)\right)$
- Find all solutions of the equation in the interval $[0, 2\pi)$
$$\cos x = \sqrt{2} - \cos x$$
- Find all solutions of the equation
$$\sqrt{3} \tan 3x = 1$$

23. Let $z_1 = 4 - 3i$ and $z_2 = 3 + 3i$

- a. Write z_1 and z_2 in trigonometric form using degree measure for the argument
- b. Find $z_1 z_2$ and $\frac{z_2}{z_1}$
- c. Evaluate $(z_1)^4$
- d. Find all the 3rd roots of z_2

24. Write an equation equivalent to $x^2 + y^2 + 5y = 0$ in polar coordinates

25. Polar coordinates

- a. Change these from polar to rectangular coordinates $(6, \pi/4)$, $(-4, \pi/6)$
- b. Change these from rectangular to polar coordinates (positive r , positive θ)
 $(-3, 3)$, $(1, -\sqrt{3})$
- c. Give 4 different polar coordinates for this point $(3, \pi/3)$
- d. Sketch the five points above on a polar coordinate system.