

MA115 Exam 3

- Make the Unit Circle with the conventional points. You don't need to prove why each point has a certain value, just show me you know the points and angles. Show both degrees and radians.
- Let θ be an acute angle of a right triangle. Define $\sin\theta$, $\cos\theta$, $\tan\theta$, $\csc\theta$, $\sec\theta$, and $\cot\theta$ in terms of side lengths of the triangle.
- Let θ be an angle in standard position with (x, y) a point on the terminal side of θ and $r = \sqrt{x^2 + y^2} \neq 0$. Define $\sin\theta$, $\cos\theta$, $\tan\theta$, $\csc\theta$, $\sec\theta$, and $\cot\theta$ in terms of x , y , and r .
- State the domain and range of $\sin\theta$, $\cos\theta$, $\tan\theta$, $\sin^{-1}\theta$, $\cos^{-1}\theta$, and $\tan^{-1}\theta$.
- Write $\tan\theta$, $\csc\theta$, $\sec\theta$, and $\cot\theta$ in terms of $\sin\theta$ and/or $\cos\theta$.
- Evaluate the following exactly:
 - $\cos(\frac{5\pi}{2})$
 - $\sin(3645^\circ)$
 - $\tan(-210^\circ)$
 - $\sin(\frac{-31\pi}{2})$
 - $\sec(\frac{4\pi}{3})$
 - $\tan(\frac{7\pi}{2})$
 - $\sec(-390^\circ)$
 - $\csc(450^\circ)$
 - $\cos(50\pi)$
 - $\cot(-60^\circ)$
- Evaluate the following exactly:
 - $\tan^{-1}(-\sqrt{3})$
 - $\sin^{-1}(\frac{\sqrt{3}}{2})$
 - $\cos^{-1}(\frac{1}{2})$
 - $\sin^{-1}(\frac{-\sqrt{2}}{2})$
 - $\cos^{-1}(-2)$
 - $\tan^{-1}(0)$
 - $\cos^{-1}(\tan(\frac{\pi}{4}))$
 - $\sin^{-1}(\sin(\frac{11\pi}{6}))$
 - $\cos^{-1}(\cos(-30^\circ))$
 - $\tan(\cos^{-1}(\frac{4}{5}))$
 - $\sec(\sin^{-1}(\frac{5}{13}))$
 - $\csc(\tan^{-1}(-\frac{3}{4}))$
- Write an algebraic expression that is equivalent to the given expression for the following:
 - $\cot(\sin^{-1}(\frac{2x}{5}))$
 - $\cos(\tan^{-1}(x + 3))$
- State the period, asymptotes, x-intercepts, y-intercepts, maximum y-value, and minimum y-value of ONE of the following graphs: $y = \sin x$, $y = \cos x$, $y = \tan x$, $y = \csc x$, $y = \sec x$, or $y = \cot x$.

Bonus: What is the total number of counties in the Upper Peninsula of Michigan?