

Name _____ raw scaled percent

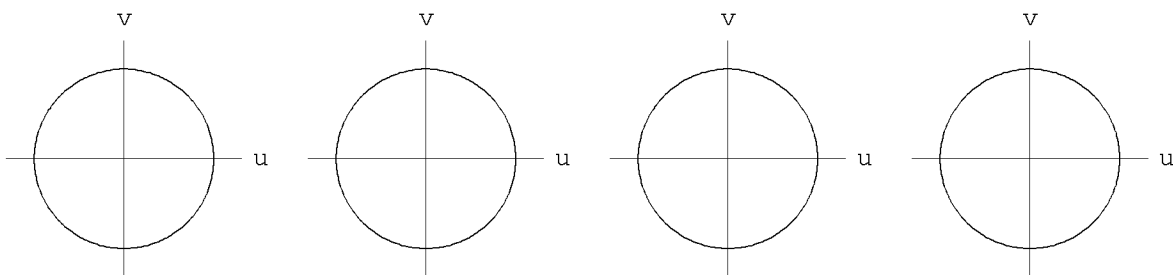
Math 11 Trimester 1 Exam 3 (307 Points)
Beginning Trig

- Partial credit may be given for correct work. Therefore, it is to your advantage to write clear solutions. If I cannot understand a solution within 90 seconds, then it will receive no partial credit.
- Answers must be completely simplified. No denominators may include radicals. All fractions reduced. Arithmetic must be completely performed; e.g. write 9 instead of $\sqrt{81}$.
- All angles you write for answers must be written with respect to the angle zero and measured in the positive direction (counter clockwise). For example, write $\theta = \frac{3\pi}{2}$ rather than $\theta = -\frac{\pi}{2}$.
- No calculators. All answers must be exact.
- A. Fill in the table below. (2 pts each cell)

[1]

$\theta \rightarrow$	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	π	$\frac{3\pi}{2}$	2π
$\sin(\theta)$								
$\cos(\theta)$								

■ B. Find the following values. (Unit circles provided for your convenience, should you wish to use them.) (19 points each question)



[1] $\sin \frac{5\pi}{6}$

[2] $\sin \frac{11\pi}{6}$

[3] $\cos \frac{7\pi}{6}$

[4] $\tan \frac{3\pi}{4}$

■ C. Answer the following. (15 points each question)

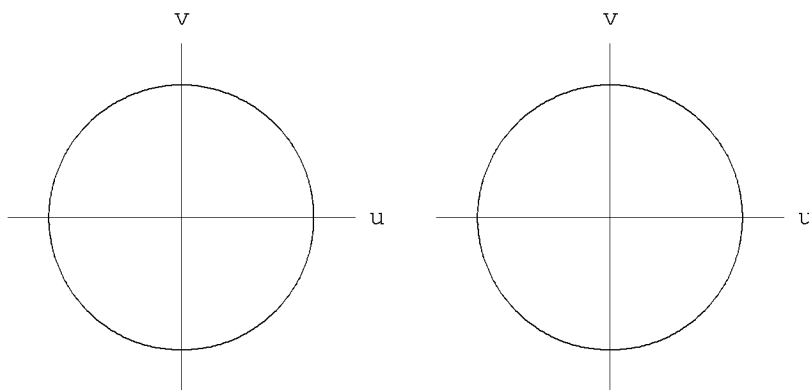
[1] If $\tan \theta = \frac{2}{5}$, find the numerical value of $\frac{\sin \theta - 2\cos \theta}{\cos \theta - 3\sin \theta}$

[2] Find the value of $\cos \theta$, if $\sin \theta = -\frac{3}{5}$ and θ is an angle in the third quadrant.

■ D. Prove the following. (15 points each question)

$$[1] \quad \frac{1-\cos \alpha}{1+\cos \alpha} = \left(\frac{\sin \alpha}{1+\cos \alpha} \right)^2$$

- E. Answer the following. If your answer requires the use of "and" or of "or" or requires the use of \cup or \cap , be sure to use them. (Unit circles provided for your convenience, should you wish to use them.) (23 points each question)

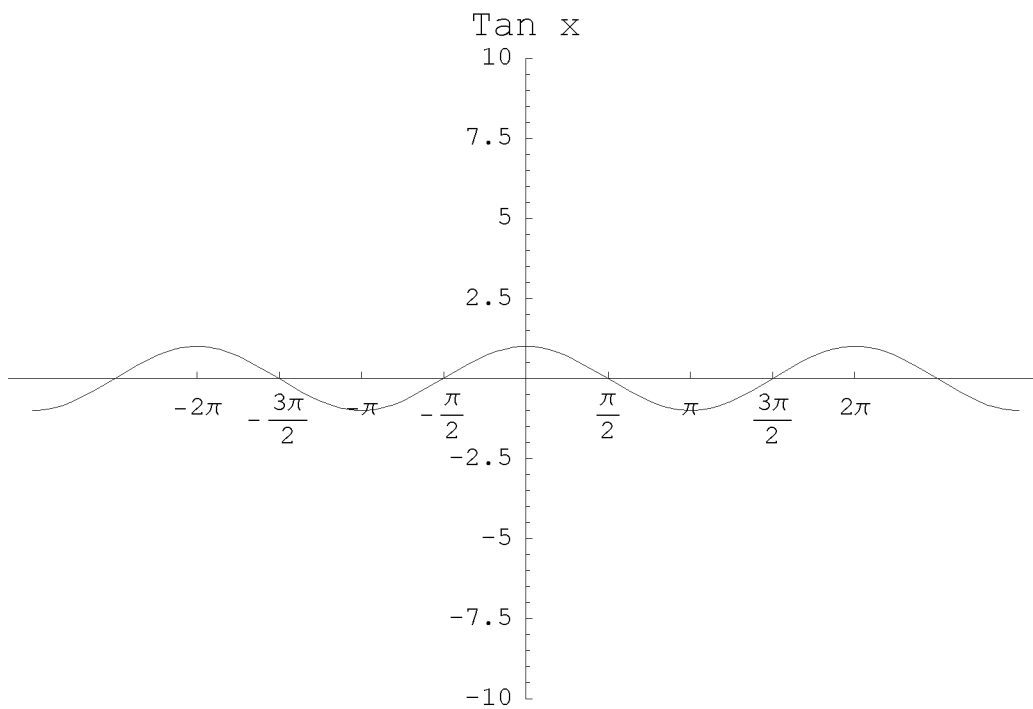


[1] Find all angles such that $\cos \theta = \frac{1}{2}$.

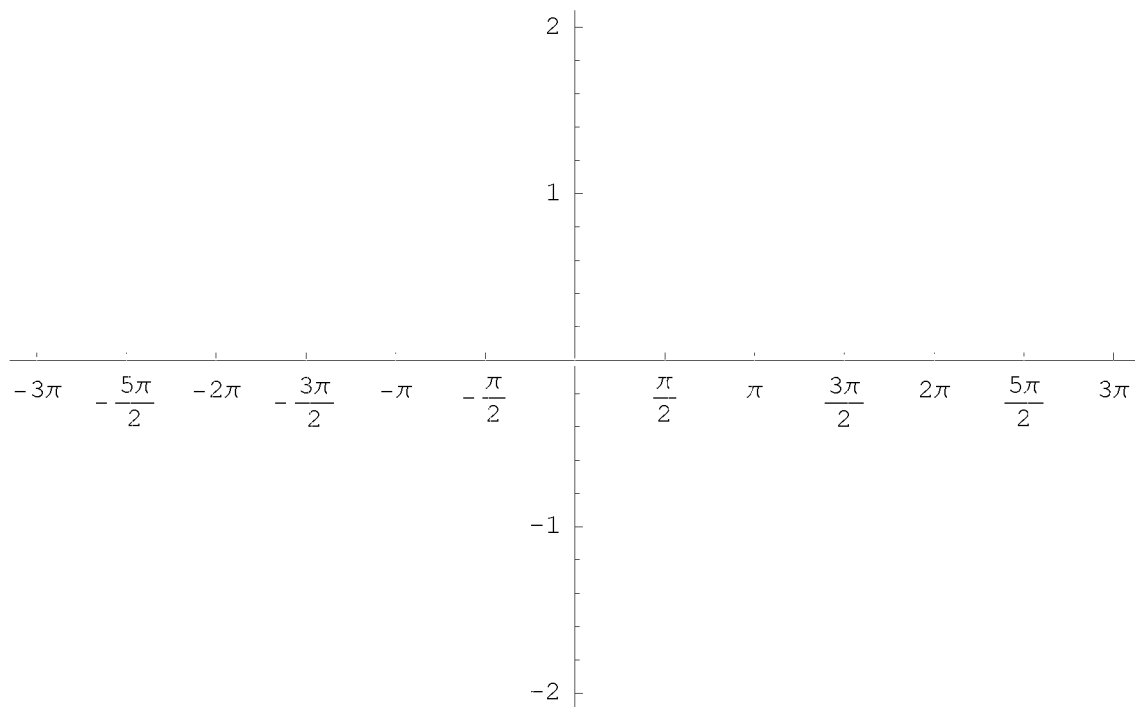
[2] Find the range of angle θ which satisfies the inequality $\sin \theta < \frac{1}{2}$. Assume that $0 \leq \theta < 2\pi$.

■ F. Graph the following. (31 points each question)

[1] $y = \tan x, x \in \mathbb{R}$



[2] $y = \sin 3(x - \frac{\pi}{2}), x \in \mathbb{R}$



■ G. Answer the following. (23 points each question)

[1] Write the function that corresponds to the following graph.

