

Final exam info:

45 questions, 90 points.

Multiple choice, NO calculator.

Fill in unit circle, use it to find exact values.



of questions

8 Ch.8 polar coordinates/equations

9 Ch.11 conics

5 Ch.13 limits

23 Trig: unit circle, triangles, all 6 functions, identities, principal values

Final exam info:



- ✓ **Bring CHARGED chromebook.**
- ✓ **No personal devices...must log in to secure browser.**

of questions

- 8** **Ch.8** polar coordinates/equations
- 9** **Ch.11** conics
- 5** **Ch.13** limits
- 23** **Trig:** unit circle, triangles, all 6 functions, identities, principal values

Page 1 of pink sheet will be provided on final exam

Polar Coordinates

$$r^2 = x^2 + y^2 \text{ or } r = \sqrt{x^2 + y^2}$$

$$\tan \theta = \frac{y}{x}$$

$$x = r \cos \theta$$

$$y = r \sin \theta$$

polar form of a complex number
 $r(\cos \theta + i \sin \theta)$

$$z_1 \cdot z_2 =$$

$$r_1 r_2 [\cos(\theta_1 + \theta_2) + i \sin(\theta_1 + \theta_2)]$$

$$\frac{z_1}{z_2} = \frac{r_1}{r_2} [\cos(\theta_1 - \theta_2) + i \sin(\theta_1 - \theta_2)]$$

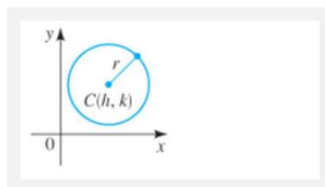
DeMoivre's Theorem

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

Conic Sections

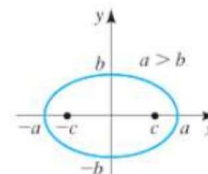
Circles

$$(x - h)^2 + (y - k)^2 = r^2$$



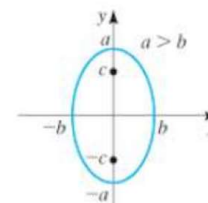
Ellipses

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$$



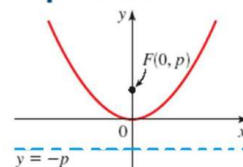
Foci $(\pm c, 0)$, $c^2 = a^2 - b^2$

$$\frac{x^2}{b^2} + \frac{y^2}{a^2} = 1$$

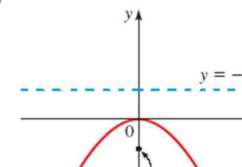


Foci $(0, \pm c)$, $c^2 = a^2 - b^2$

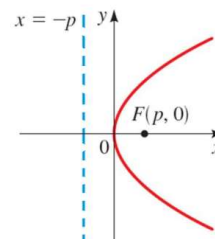
Equations and Graphs of Parabolas



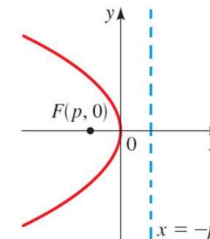
$$x^2 = 4py \text{ with } p > 0$$



$$x^2 = 4py \text{ with } p < 0$$



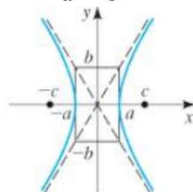
$$y^2 = 4px \text{ with } p > 0$$



$$y^2 = 4px \text{ with } p < 0$$

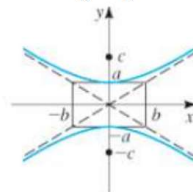
Hyperbolas

$$\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$$



Foci $(\pm c, 0)$, $c^2 = a^2 + b^2$

$$\frac{y^2}{a^2} - \frac{x^2}{b^2} = 1$$



Foci $(0, \pm c)$, $c^2 = a^2 + b^2$

You will fill in the blanks for principal values, unit circle, and identities on final exam day.

1. Name the function that best completes each identity.

a. _____ = $\frac{\sin \theta}{\cos \theta}$ b. _____ = $\frac{\cos \theta}{\sin \theta}$

c. _____ = $\frac{1}{\cos \theta}$

d. _____ = $\frac{1}{\tan \theta}$

e. _____ = $\frac{1}{\sin \theta}$

f. _____ + _____ = 1

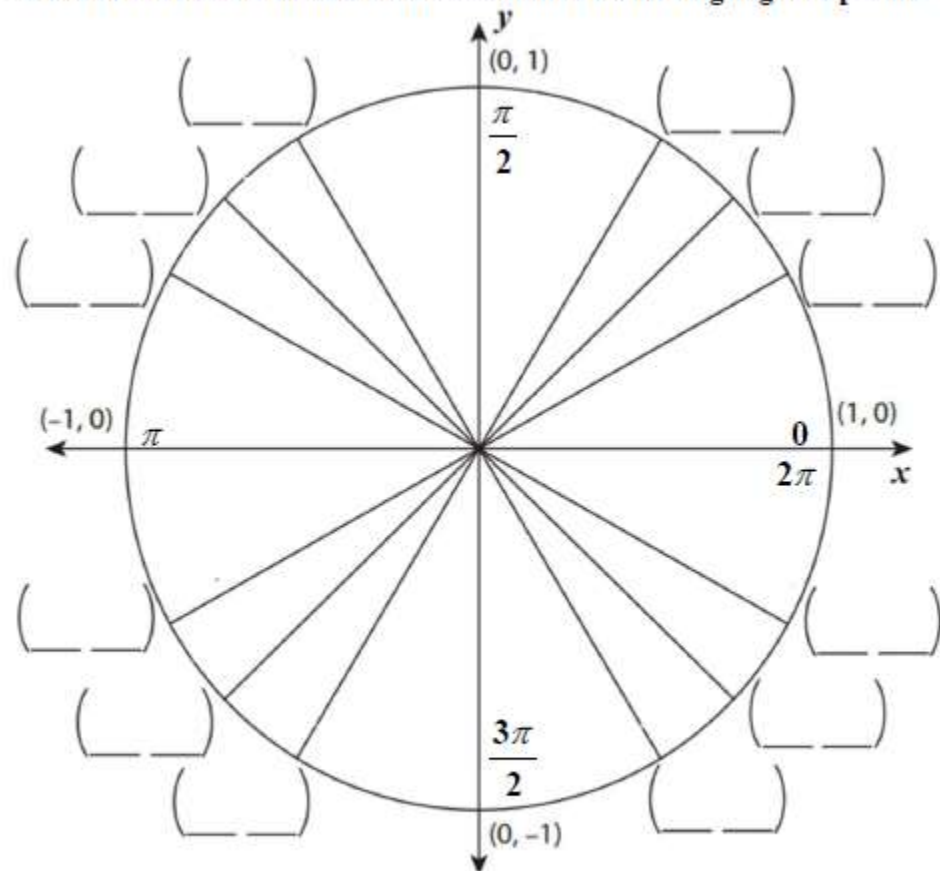
g. $1 + \cot^2 \theta =$ _____

h. $\tan^2 \theta + 1 =$ _____

i. $\sin 2\theta =$ _____

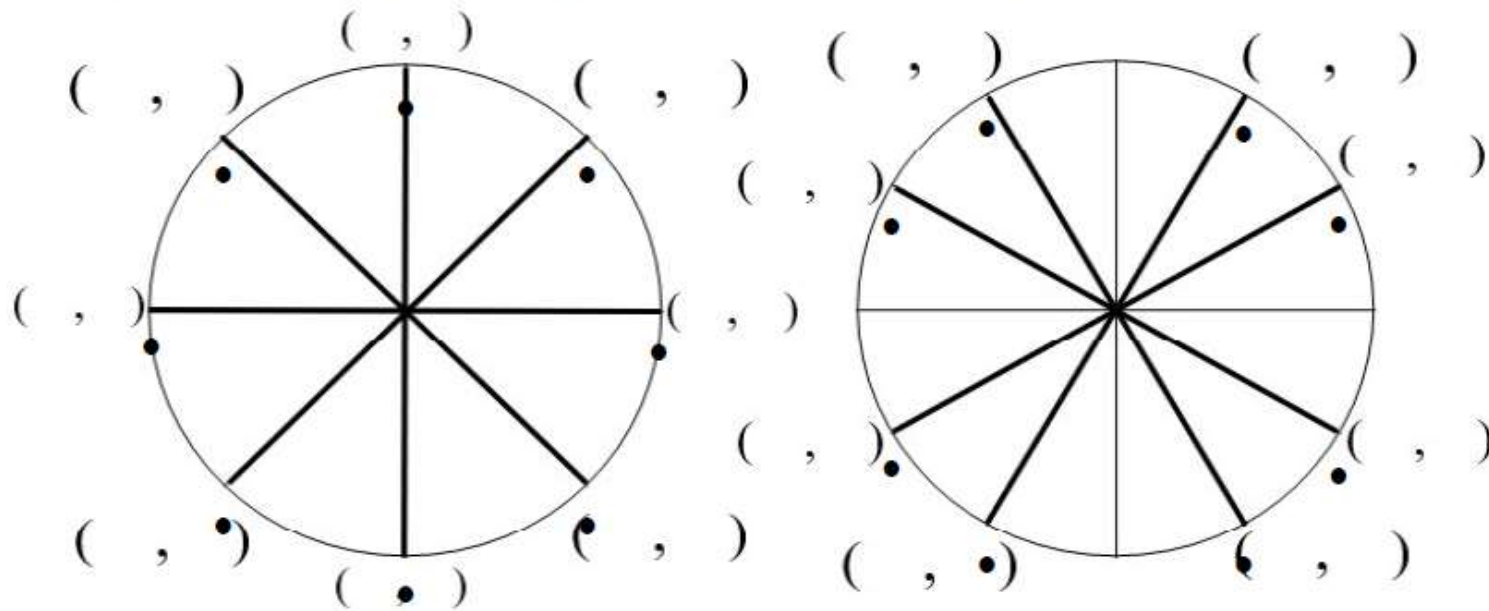
j. $\cos 2\theta =$ _____

2. Label the radian values AND coordinates for the highlighted points.



After filling in the blanks, you will use the information for reference during the exam.

Label all radian values AND coordinates of each highlighted terminal point.



Principal Values:

To find a unique solution for $\sin x$ and $\tan x$, refer only to Quadrant $___$ or $___$.

To find a unique solution for $\cos x$, refer only to Quadrant $___$ or $___$.

Define each general function in terms of x, y, and r:

$\sin \theta =$

$\cos \theta =$

$\tan \theta =$

$\csc \theta =$

$\sec \theta =$

$\cot \theta =$

Final exam day: SNACKS!!



Mrs. Rosenow will provide:



water, cups, napkins, plates, bagels, fruit.

You may bring your own snack and/or bring breakfast items to share with others.



You don't have to bring enough for everyone, just bring one or two dozen items.



Principal Values:

Principal values create a unique (one) solution:

Sin θ and **T**an θ \rightarrow Quadrant I (+)

Quadrant IV (-)

$$-\frac{\pi}{2} \leq \theta \leq \frac{\pi}{2}$$

Cos θ \rightarrow Quadrant I (+)

Quadrant II (-)

$$0 \leq \theta \leq \pi$$

Check answers to ch.8 review sheet:

1. **A**

2. **B**

8. **B**

9. **A**

10. **D**

11. **C**

12. **A**

13. **B**

14. **D**

15. **C**

16. **D**

17. **D**

18. **A**

19. **D**

20. **C**