

F.S.T.  
Chapter 4a Review (4-1 through 4-5)

Name KEY  
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Non-Calculator

need a calculator!  
↓

1. Complete the table.

Equivalent Measures of Rotations			
Degrees	Radians (exact)	Radians (nearest tenth)	Revolutions
-135°	a) $-3\pi/4$	b) <del>2.7</del>	c) $3/8$
d) -288°	$-\frac{8\pi}{5}$	e) $\approx 5.0$	f) $-4/5$
g) 240°	h) $4\pi/3$	j) $\approx 4.2$	$\frac{2}{3}$
k) 740°	$\frac{37\pi}{9}$	m) 12.9	n) 2.056 rev

a)  $-135^\circ \cdot \frac{\pi}{180} = \frac{3\pi}{4}$   
 c)  $-135^\circ \cdot \frac{1 \text{ rev}}{360^\circ} = -3/8 \text{ rev}$   
 d)  $-\frac{8\pi}{5} \cdot \frac{180}{\pi} = -288^\circ$   
 f)  $-\frac{8\pi}{5} \cdot \frac{1 \text{ rev}}{2\pi} = -4/5 \text{ rev}$   
 g)  $\frac{2}{3} \text{ rev} \cdot \frac{360^\circ}{1 \text{ rev}} = 240^\circ$   
 h)  $\frac{2}{3} \text{ rev} \cdot \frac{2\pi}{1 \text{ rev}} = 4\pi/3$

k)  $\frac{37\pi}{9} \cdot \frac{180}{\pi} = 740$       n)  $\frac{37\pi}{9} \cdot \frac{1 \text{ rev}}{2\pi} = \frac{37}{18} \text{ rev} \approx 2.056$

Give the exact value for each expression.

2.  $\sin 270^\circ = -1$       3.  $\cos 2\pi = 1$       4.  $\tan 90^\circ = \frac{1}{0} \Rightarrow$  undefined      5.  $\cos \frac{-3\pi}{2} = 0$       6.  $\tan \frac{5\pi}{2}$  undefined

If  $\cos \theta = 0.68$ , find all possible values of each.

7.  $\sin(\frac{\pi}{2} - \theta)$       8.  $\cos(-\theta)$       9.  $\cos(\pi + \theta)$       10.  $\cos(\pi - \theta)$

**SKIP**

from §4.4

If  $\sin \theta = \frac{-4}{5}$ , find each expression.

11.  $\cos \theta$   
 in QIII:  $\cos \theta = -3/5$   
 in QIV:  $\cos \theta = 3/5$

QIII or QIV

12.  $\tan \theta$   
 in QIII:  $\tan \theta = 4/3$   
 in QIV:  $\tan \theta = -4/3$

Give exact values for each expression.

13.  $\tan 330^\circ$       14.  $\cos \frac{7\pi}{3}$       15.  $\sin \frac{-7\pi}{6}$       16.  $\cos(-135^\circ)$       17.  $\tan \frac{7\pi}{4}$

30° Ref Δ in QIV      60° Ref Δ QI      30° Ref Δ QII      45° Ref Δ QIII      45° Ref Δ QIV

$-\frac{1}{\sqrt{3}}$  or  $-\frac{\sqrt{3}}{3}$        $\frac{1}{2}$        $\frac{1}{2}$        $-\frac{1}{\sqrt{2}}$  or  $-\frac{\sqrt{2}}{2}$        $-1$

Calculator Allowed

18. The radius of the circle is 8 inches. The area of the shaded sector is  $10\pi$  square inches. Find the measure of  $\angle AOB$  in radians. Find the length of arc AB.

$$A_{\text{sector}} = \frac{\theta}{2} \cdot r^2$$

$$10\pi = \frac{\theta}{2} \cdot 8^2$$

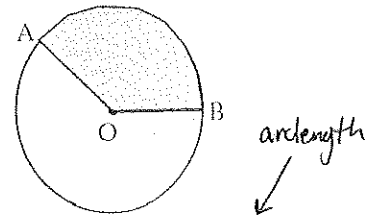
$$10\pi = 32\theta$$

$$\theta = \frac{10\pi}{32} = \boxed{\frac{5\pi}{16}}$$

$m\angle AOB$

$$s = \theta \cdot r$$

$$s = \frac{5\pi}{16} \cdot 8 = \boxed{5\pi/2 \text{ inches}}$$



19. In a circle of diameter 22 feet, a sector is formed by a central angle of  $136^\circ$ . Find the area of the sector to the nearest hundredth of a square foot.

if  $d=22, r=11$

if  $\theta$  central angle =  $136^\circ$ ,

$$\theta = 136 \cdot \frac{\pi}{180} = \frac{34\pi}{45}$$

$$A_{\text{sector}} = \frac{\theta}{2} \cdot r^2$$

$$= \frac{34\pi/45}{2} \cdot 11^2 \approx \boxed{143.61 \text{ ft}^2}$$

20. In a circle of radius 14 cm, how long is an arc with a central angle of  $\frac{5\pi}{8}$ ?

$$s = r \cdot \theta$$

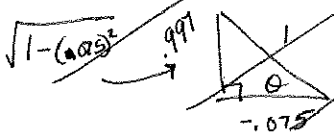
$$s = 14 \cdot \frac{5\pi}{8} = \boxed{\frac{35\pi}{4} \text{ cm}}$$

21. In what interval(s) between 0 and  $2\pi$  are  $\tan \theta$  and  $\sin \theta$  both positive? both negative?

Q I

Q III

22. Suppose  $\cos \theta = -0.75$ . Find  $\sin \theta$  and  $\tan \theta$  to the nearest thousandth.



$\sin \theta =$

SKIP

23. Approximate  $\cos \frac{3\pi}{7}$  to four decimal places.

$\approx .2225$

(Be sure to be in Radian Mode)

Review from Previous Chapters

Anything from chapters 1 and 7 is fair game!