

$$\frac{\pi}{180} = \frac{1}{d}$$

AFM Review Sheet

Name: _____

Date: _____ Period: _____

Change from degrees to radians (in terms of π):

1. $80^\circ = \frac{4\pi}{9}$
 $\frac{\pi}{180} = 80$

2. $-275^\circ = \frac{-55\pi}{36}$
 ~~$\frac{\pi}{180} = -275$~~ $\frac{\pi}{144} = -275$

3. $450^\circ = \frac{5\pi}{2}$ $\frac{\pi}{180} = \frac{1}{450}$

Change from radians to degrees:

4. $3.5 = 200.54^\circ$
 $\frac{\pi}{180} = \frac{3.5}{x}$

5. $\frac{5\pi}{18} = 50^\circ$

6. $-\frac{\pi}{9} = -20$

Find an angle between 0° and 360° that is coterminal with:

7. $-1025^\circ = 55^\circ$

8. $755^\circ = 35^\circ$

9. $-15^\circ = 345^\circ$

Find an angle between 0 and 2π that is coterminal with:

10. $\frac{15\pi}{4} = \frac{7\pi}{4}$

11. $-\frac{10\pi}{3} = \frac{2\pi}{3}$

12. $-26\pi = 0$

13. Find the length of the arc of a circle with radius 15 m that subtends a central angle of 120° .

$s = r\theta$ $\frac{\pi}{180} = \frac{1}{120}$ $s = \frac{2\pi}{3} \cdot 15 = 10\pi$ m

14. A central angle θ in a circle with radius 12 cm is subtended by an arc of length 18 cm. Find the measure of θ in radians.

$18 = 12\theta$ $\theta = \frac{3}{2}$

15. Find the area of a sector of a circle with central angle 150° if the radius of the circle is 10 m.

$A = \frac{1}{2}r^2\theta$ $\frac{\pi}{180} = \frac{1}{150}$ $\theta = \frac{5\pi}{6}$ $\frac{1}{2} \cdot 5\pi \cdot 10^2 = \frac{125\pi}{3}$ m²

16. Find the exact value of the trigonometric function:

a) $\cos -120^\circ = -\frac{1}{2}$

b) $\sin 210^\circ = -\frac{1}{2}$

c) $\sin -225^\circ = \frac{+\sqrt{2}}{2}$

d) $\cos -60^\circ = \frac{1}{2}$

e) $\sin -\frac{5\pi}{6} = -\frac{1}{2}$

f) $\tan 270^\circ = \text{undef.}$

g) $\tan \frac{2\pi}{3} = -\sqrt{3}$

h) $\sin \frac{7\pi}{4} = -\frac{\sqrt{2}}{2}$

i) $\cos 720^\circ = 1$

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

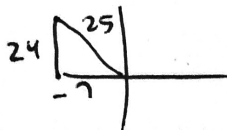
$\frac{\sqrt{3}}{2} \cdot \frac{-2}{1}$

17. Find $\sin \theta$, given $\cos \theta = -\frac{3}{5}$ in quadrant III.



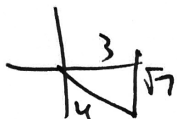
$$\sin \theta = -\frac{4}{5}$$

18. Find $\cos \theta$, given $\sin \theta = \frac{24}{25}$ in quadrant II.



$$\cos \theta = -\frac{7}{25}$$

19. Find $\tan \theta$, given $\cos \theta = \frac{3}{4}$ in quadrant IV.



$$\tan \theta = -\frac{4}{3}$$

20. For the equation, $f(x) = -4 \sin 3(\theta + 45^\circ)$, find the following values:

amplitude = 4

period = ~~360~~ 120°

phase shift = Left 45°

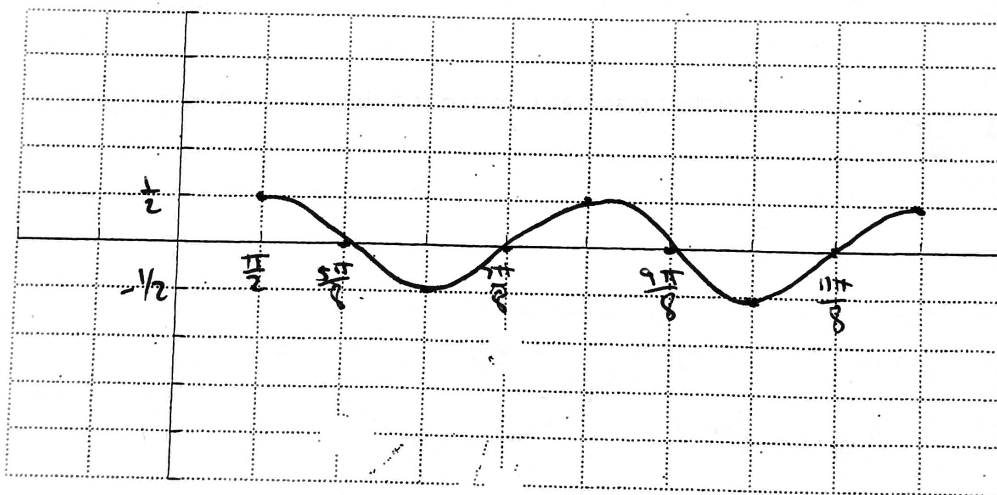
21. For the equation, $f(x) = \frac{1}{2} \cos 4(\theta - \frac{\pi}{2})$, find the following values:

amplitude = $\frac{1}{2}$

period = $\frac{\pi}{2}$

phase shift = Right $\frac{\pi}{2}$

22. Draw the graph for #21. Graph two periods of the function. Don't forget to label your scale!



~~$\frac{\pi}{2}, \frac{3\pi}{8}, \frac{\pi}{2}, \frac{5\pi}{8}, \frac{3\pi}{4}, \frac{7\pi}{8}, \frac{\pi}{2}$~~

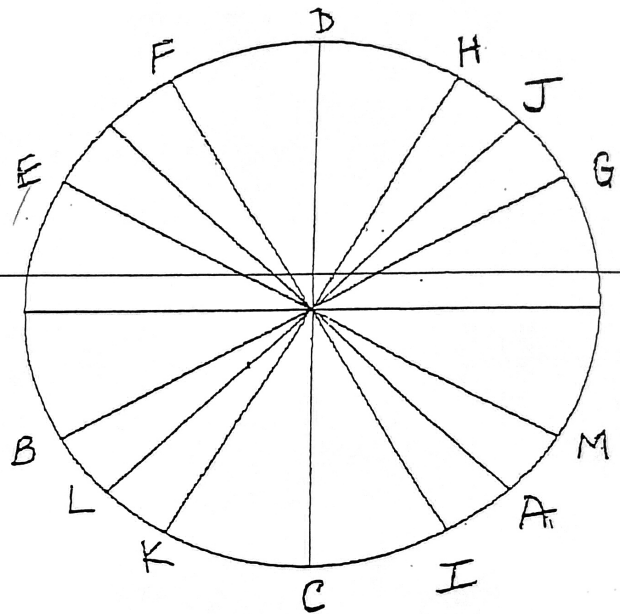
$\frac{\pi}{2}, \frac{5\pi}{8}, \frac{3\pi}{4}, \frac{7\pi}{8}, \frac{\pi}{2}, \frac{9\pi}{8}, \frac{5\pi}{4}, \frac{11\pi}{8}, \frac{3\pi}{2}$

Find the exact value of the trigonometric function:

1. $\sin 120^\circ = \frac{\sqrt{3}}{2}$ 2. $\cos 210^\circ = -\frac{\sqrt{3}}{2}$ 3. $\cos 225^\circ = -\frac{\sqrt{2}}{2}$ 4. $\cos 180^\circ = -1$
5. $\sin -60^\circ = -\frac{\sqrt{3}}{2}$ 6. $\sin -30^\circ = -\frac{1}{2}$ 7. $\cos \frac{5\pi}{6} = -\frac{1}{2}$ 8. $\sin \frac{5\pi}{4} = -\frac{\sqrt{2}}{2}$
9. $\sin \frac{2\pi}{3} = \frac{\sqrt{3}}{2}$ 10. $\cos \frac{3\pi}{2} = 0$ 11. $\tan -\frac{\pi}{2} = \text{undefined}$ 12. $\tan \frac{3\pi}{4} = -1$

Match the angle to its location on the unit circle (some letters may not be used; some letters may be used more than once).

13. $\frac{4\pi}{3} = K$ 14. $225^\circ = L$
15. $-\frac{\pi}{2} = C$ 16. $300^\circ = \text{A, I}$
17. $\frac{5\pi}{6} = E$ 18. $-150^\circ = B$
19. $\frac{7\pi}{4} = A$ 20. $-330^\circ = G$



Find the angle on the unit circle having the given terminal point.

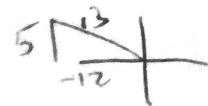
21. $(\frac{1}{2}, -\frac{\sqrt{3}}{2})$ 330° $11\pi/6$ 22. $(-\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2})$ 135° $3\pi/4$ 23. $(0, -1)$ 270° $3\pi/2$
24. $(-\frac{\sqrt{3}}{2}, -\frac{1}{2})$ 210° $7\pi/6$ 25. $(1, 0)$ 0 26. $(\frac{\sqrt{3}}{2}, -\frac{1}{2})$ 330° $11\pi/6$

27. Find $\cos \theta$, given $\sin \theta = \frac{4}{5}$ (quad. II)



$\cos \theta = -\frac{3}{5}$

29. Find $\sin \theta$, given $\cos \theta = -\frac{12}{13}$ (quad. II)



$\sin \theta = \frac{5}{13}$

28. Find $\cos \theta$, given $\sin \theta = \frac{3}{8}$ (quad. II)



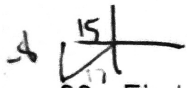
$\cos \theta = -\frac{\sqrt{55}}{8}$

30. Find $\tan \theta$, given $\sin \theta = \frac{3}{10}$ (quad. II)



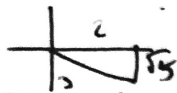
$\tan \theta = \frac{3}{-\sqrt{91}} = -\frac{3\sqrt{91}}{91}$

31. Find $\cos \theta$, given $\sin \theta = -\frac{8}{17}$ (quad III)



$\cos \theta = -15/17$

33. Find $\sin \theta$, given $\cos \theta = \frac{2}{3}$ (quad IV)



$\sin \theta = -\frac{5}{3}$

34. Change from degrees to radians (in terms of π):

$\frac{\pi}{180} = \frac{1}{180}$

35. Change from radians to degrees:

a.) 100°
 $5\pi/9$

b.) -135°
 $-\frac{3\pi}{4}$

a.) $\frac{5\pi}{6}$
 150°

b.) $-\frac{3\pi}{2} = -270^\circ$
c.) 5.27
 299.6°

36. Find an angle between 0° and 360° that is coterminal with: a.) 675°
 315°

b.) -845°
 235°

37. Find an angle between 0 and 2π that is coterminal with: a.) $\frac{7\pi}{2}$ b.) $\frac{19\pi}{3}$ c.) $\frac{-17\pi}{6}$

$3\pi/2$

$17/3$

$7\pi/6$

38. Find the length of an arc of a circle with radius 14 cm that subtends a central angle of 30° .

$\theta = \frac{\pi}{6}$ $S = \theta r$ $S = \frac{\pi}{6} \cdot 14 = \frac{7\pi}{3}$

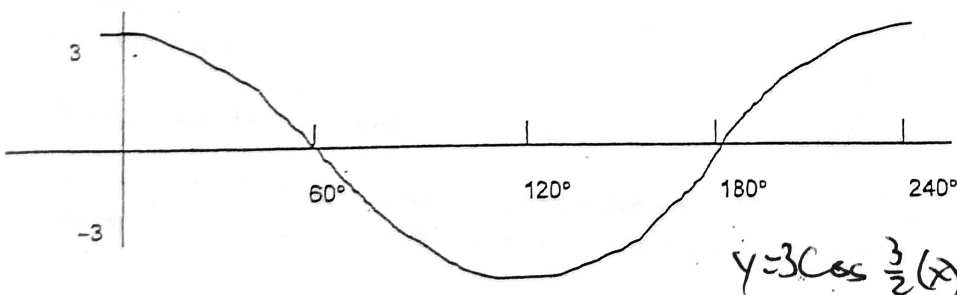
39. Find the area of a sector of a circle with central angle 120° if the radius of the circle is 8 cm.

$A = \frac{1}{2} \theta r^2$ $\frac{1}{2} \cdot \frac{2\pi}{3} \cdot 8^2 = 64\frac{\pi}{3} \text{ cm}^2$

40. For the equation $f(x) = -2\sin(3(\theta - 30^\circ))$, amplitude = 2

period = ~~240~~ 120 phase shift = $\pi - 30^\circ$

41. Find the equation for the cosine function graphed below:



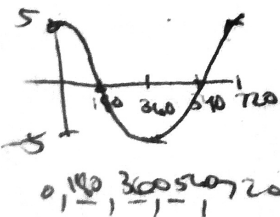
$\frac{360}{k} = 240$
 $k = 1.5$

$y = 3\cos \frac{3}{2}(x)$

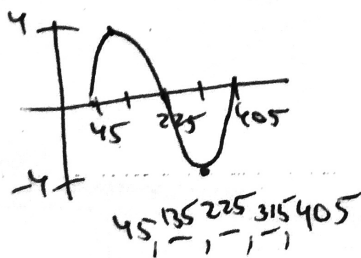
42. Draw the graph of:

a) $y = 5 \cos \frac{\theta}{2}$

$A = 5$ $P = 720$



b) $y = 4 \sin(\theta - 45^\circ)$



c) $y = -3 \sin 3\theta$

