PRECALCULUS
CHAP 3 REVIEW

(B-2013)

NAME: MAYO

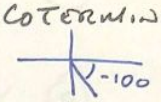
WHAT IS A RADIAN?

(#14 IS CALC ACTIVE)

① CONVERT 70° TO RADIANS. $\frac{70\pi}{180} = \boxed{\frac{7\pi}{18}}$

② CONVERT $\frac{3\pi}{5}$ TO DEGREES. $\frac{3\pi}{5} \cdot \frac{180}{\pi} = 3(36) = \boxed{108°}$

③ FIND AN ANGLE BETWEEN 0° AND 360° THAT IS COTERMINAL WITH −100°. $360 + (-100) = 260°$




④ GIVE EXACT VALUES FOR:

Ⓐ $\cos\frac{\pi}{6} = \frac{\sqrt{3}}{2}$

Ⓑ $\csc\frac{7\pi}{6} = -2$

Ⓒ $\tan\frac{3\pi}{4} = -1$

Ⓓ $\sin\frac{11\pi}{6} = -\frac{1}{2}$

⑤ GIVEN P(−4, 3) ON THE TERMINAL SIDE OF θ, AN ANGLE IN STANDARD POSITION, FIND:

$x = -4$
$y = 3$
$r = 5$

$\sin\theta = \frac{3}{5}$ $\quad \cot\theta = -\frac{4}{3}$

$\cos\theta = -\frac{4}{5}$ $\quad \sec\theta = -\frac{5}{4}$

$\tan\theta = -\frac{3}{4}$ $\quad \csc\theta = \frac{5}{3}$

⑥ GIVEN $\cos\theta = \frac{2}{3}$, $\sin\theta < 0$, FIND:

$x = 2$
$r = 3$

$4 + y^2 = 9$
$y^2 = 5$
$y = -\sqrt{5}$

$\sin\theta = -\frac{\sqrt{5}}{3}$ $\quad \cot\theta = \frac{2}{-\sqrt{5}}$ $\quad \csc\theta = -\frac{3}{\sqrt{5}}$

$\tan\theta = -\frac{\sqrt{5}}{2}$ $\quad \sec\theta = \frac{3}{2}$

⑦ FOR EACH, GIVE (1) AMPLITUDE, (2) PERIOD, (3) MIDLINE, (4) PHASE SHIFT:

Ⓐ $y = 3\sin x$ $\quad A = 3$, $P = 2\pi$, $MID = 0$

Ⓑ $y = -2 + 2\cos x$ $\quad MID = -2$, $A = 2$, $P = 2\pi$

Ⓒ $y = -3 + 2\cos(7x)$ $\quad A = 2$, $MID = -3$, $P = \frac{2\pi}{7}$

Ⓓ $y = 4 - 2\cos\left(2\pi\left(x - \frac{\pi}{2}\right)\right)$ $\quad A = 2$, $MID = 4$, $P = 1$, $PS = \pi/2$

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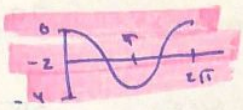
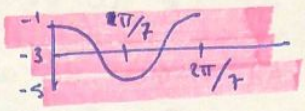
(8) GRAPH EACH OF THE FOLLOWING. LABEL SIGNIFICANT POINTS

(A) $y = 3\sin x$

(B) $y = -2 + 2\cos x$




(C) $y = -3 + 2\cos(7x)$ $P = \frac{2\pi}{7}$

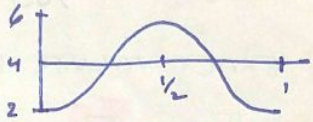


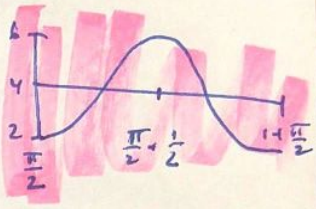

(D) $y = 4 - 2\cos\left(2\pi\left(x - \frac{\pi}{2}\right)\right)$

$P = \frac{2\pi}{2\pi} = 1$ MID = 4

A = 2

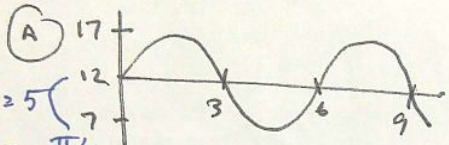
PS = $R\pi/2$




(9) FOR EACH GRAPH GIVE A FUNCTION.

(A)

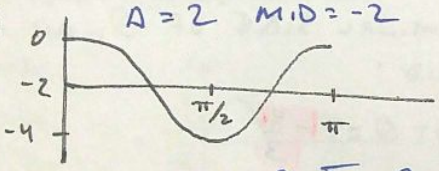



A = 5

P = 6 B = π/3

$y = 5\sin\left(\frac{\pi}{3}x\right) + 12$

(B)



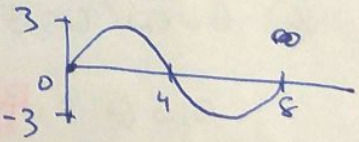

A = 2 MID = -2

P = π B = 2

$y = 2\cos(2x) - 2$

(10) GIVE A TRIG FUNCTION FOR $f(t) = A\sin B(t)$ REPRESENTED BY THE TABLE BELOW:

| $t$ | 0 | 2 | 4 | 6 | 8 | 10 |
|---|---|---|---|---|---|---|
| $f(t)$ | 0 | 3 | 0 | -3 | 0 | 3 |




P = 8

$f(t) = 3\sin\left(\frac{\pi}{4}t\right)$

(11) FIND EACH OF THE FOLLOWING:

(A) $\sin^{-1}(0) = 0$

(B) $\cos^{-1}(-1) = \pi$

(C) $\sin^{-1}\left(\frac{\sqrt{2}}{2}\right) = \pi/4$

(D) $\tan^{-1}\sqrt{3} = \frac{\pi}{3}$

(E) $\cos^{-1}\left(\frac{\sqrt{3}}{2}\right) = \pi/6$

(F) $\sec^{-1}(-1) = \pi$

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(12) FIND THE GENERAL SOLUTION (RADIANS):

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

$\theta = \frac{\pi}{6} + 2\pi k$

$\theta = \frac{11\pi}{6} + 2\pi k$

(B) $\tan x + 1 = 0$ $\quad \tan x = -1$ $\quad \theta = \frac{3\pi}{4} + k\pi$

(13) FIND THE SOLUTION OVER $[0, 2\pi)$:

(A) $\cos^2 x - \cos x = 0$

$\cos x(\cos x - 1) = 0$

$\cos x = 0 \quad \cos x = 1$

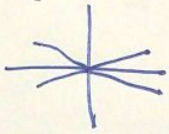
$x = \frac{\pi}{2}, \frac{3\pi}{2} \quad x = 0$

$x = \{0, \frac{\pi}{2}, \frac{3\pi}{2})$

(B) $3\tan^2 x - 1 = 0$

$\tan^2 x = \frac{1}{3}$

$\tan x = \pm\sqrt{\frac{1}{3}} = \pm\frac{\sqrt{3}}{3}$



$(x = 30, 150, 210, 330)$

$x = \{\frac{\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{11\pi}{6}\}$

CALC ACTIVE

(14) FIND THE SOLUTION OVER THE INTERVAL $[0, 360)$:

(A) $5\sin\theta - 2 = 0$

$\sin\theta = \frac{2}{5}$

$\theta = \sin^{-1}(\frac{2}{5})$

CALC

$\theta = 23.578$

$\theta = 156.422$

(B) $\sec^2\theta + 5\sec\theta + 4 = 0$

$(\sec\theta + 4)(\sec\theta + 1) = 0$

$\sec\theta = -4 \quad \sec\theta = -1$

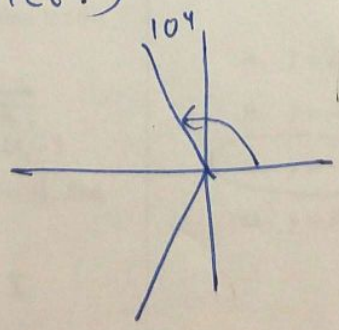
$\frac{1}{\cos\theta} = -4 \quad \frac{1}{\cos\theta} = -1$

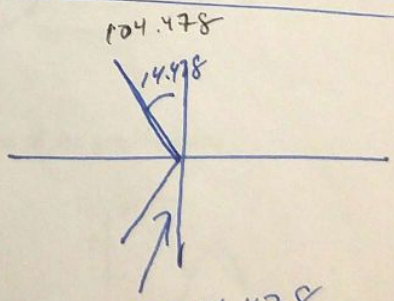
$\cos\theta = -\frac{1}{4} \quad \cos\theta = -1$

$\theta = 104.478^\circ, 255.5^\circ \quad \theta = 180$

(15) CREATE + SOLVE A "TIDE PROBLEM."

(YOUR CHOICE.)




$270 - 14.478$

$255.5$

$\cos^{-1}(-\frac{1}{4}) = 104.478^\circ$

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Trig Review

Name: MAYO

Date: F2012

1. Express $\frac{3\pi}{4}$ radians in degrees.

$\frac{3\pi}{4} \cdot \frac{180}{\pi} = \boxed{135^\circ}$

2. Express $\frac{2\pi}{9}$ in degree measure.

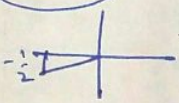
$\frac{2\pi}{9} \cdot \frac{180}{\pi} = \boxed{40^\circ}$

3. If placed in standard position, an angle of $\frac{11}{6}\pi$ radians has the same terminal side as an angle of

A. $-150^\circ$ B. $-30^\circ$ C. $150^\circ$ D. $240^\circ$

4. The value of $\sin\frac{7\pi}{6}$ is

A. $\frac{1}{2}$ B. $-\frac{1}{2}$ C. $\frac{\sqrt{3}}{2}$ D. $-\frac{\sqrt{3}}{2}$



5. The value of $\sin\frac{\pi}{3}\cos\pi$ is

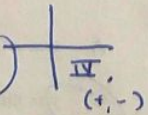
A. $-\frac{\sqrt{3}}{2}$ B. $\frac{1}{2}$ C. $-\frac{1}{2}$ D. 0

$\sin\frac{\pi}{3} = \frac{\sqrt{3}}{2}$ $\cos\pi = -1$

6. If $\sin\theta = -\frac{4}{5}$ and $\theta$ is in Quadrant IV, find $\tan\theta$.

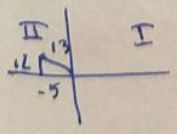
$y = -4$
$r = 5$
$x = 3$

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



7. If $\theta$ terminates in Quadrant II and $\sin\theta = \frac{12}{13}$, find $\cos\theta$.

$y = 12 \Rightarrow x < 0$
$r = 13$
$x = -5$



$\cos\theta = \frac{-5}{13}$

8. If $x$ is a positive acute angle and $\cos x = \frac{\sqrt{3}}{4}$, what is the exact value of $\sin x$?

A. $\frac{\sqrt{3}}{5}$ B. $\frac{\sqrt{13}}{4}$ C. $\frac{3}{5}$ D. $\frac{4}{5}$

$x = \sqrt{3}$
$y = \sqrt{13}$
$r = 4$

~~B+K=25~~

9. If $\csc\Theta = -2$, what is the value of $\sin\Theta$?

$\csc = \frac{1}{\sin}$

A. $-2$ B. 2 C. $-\frac{1}{2}$ D. $\frac{1}{2}$

10. What is the amplitude of the graph of $y = \frac{1}{2}\sin 2x$?

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

11. What is the period of the graph of the equation $y = 3\cos 2x$?

A. $\pi$ B. 2 C. 3 D. $2\pi$

$B = \frac{2\pi}{P}$ $P = \frac{2\pi}{B} = \frac{2\pi}{2} = \pi$

12. What is the period of the graph whose equation is $y = 2\sin 4x$?

A. $\frac{4\pi}{3}$ B. $\frac{\pi}{2}$ C. 3 D. 4

$\frac{2\pi}{4} = \frac{\pi}{2}$

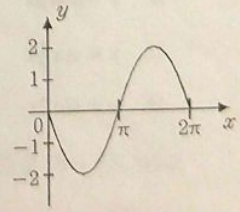
13. Which is an equation of the graph shown?

A. $y = \sin 2x$

B. $y = -\sin 2x$

C. $y = -2\sin x$

D. $y = 2\sin x$



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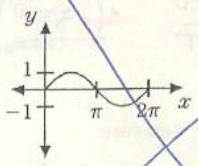
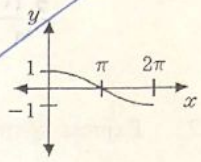
17. Which graph represents the equation $y = \frac{1}{2}\cos x$?

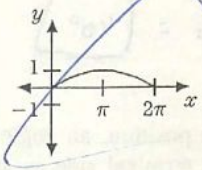
A.



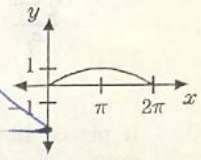

B.




C.




D.



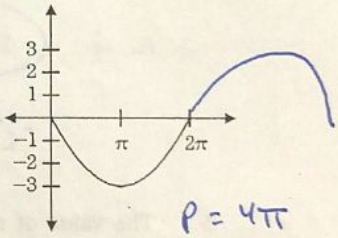

18. Which equation is represented by the graph in the accompanying diagram?

A. $y = 3\sin x$

B. $y = 3\sin \frac{1}{2}x$

C. $y = -3\sin x$

D. $y = -3\sin \frac{1}{2}x$




$P = 4\pi$

$B = \frac{2\pi}{4\pi} = \frac{1}{2}$

$A = 3$
$(-)$

19. The graph of which equation is symmetric with respect to the origin?

A. $y = -3$

B. $x = 2$

C. $y = \sin x$

D. $y = \cos x$



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