Algebra III: *Hutschenreuter*
Chapter 8
REVIEW (part 1)

Name KEY

Period _____ Date _____

Determine the amplitude and period and graph at least one full period of each of the following:

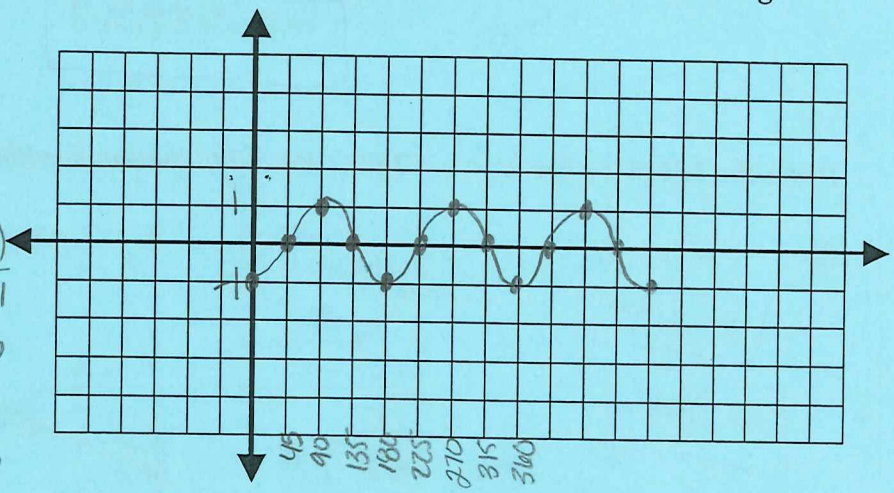
1.3 $y = -\cos 2x$

amplitude = 1

period = 180

$\frac{360}{2} = 180$

$(0°, 1)$	$(\frac{x}{2}, -y)$
$(0°, 1)$	$0, -1$
$(90°, 0)$	$45, 0$
$(180, -1)$	$90, 1$
$(270, 0)$	$135, 0$
$(360, 1)$	$180, -1$



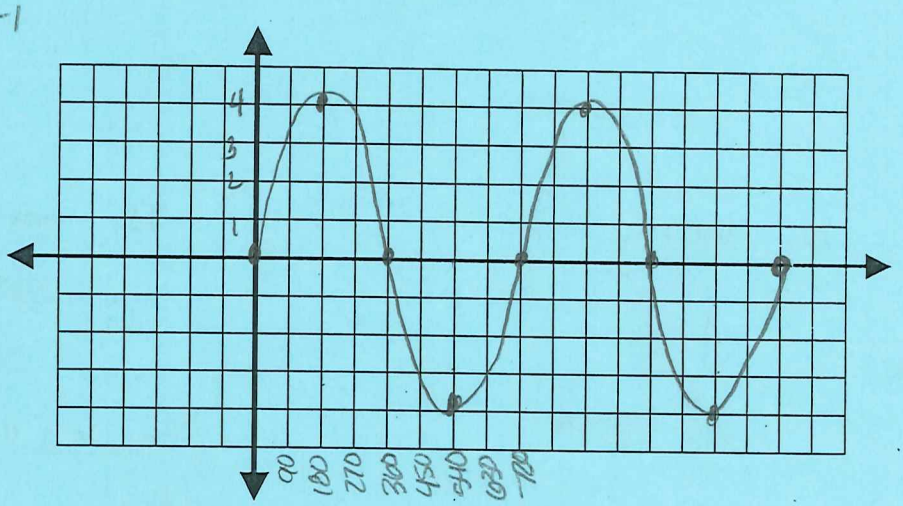
2.3 $y = 4\sin\frac{1}{2}x$

amplitude = 4

period = 720°

$\frac{360}{1/2} = 720°$

$(0°, 0)$	$(2x, 4y)$
$(0°, 0)$	$(0, 0)$
$(90, 1)$	$(180, 4)$
$(180, 0)$	$360, 0$
$(270, -1)$	$540, -4$
$(360, 0)$	$(720, 0)$



3.2 The inclination of a line is 67°. Find its slope.

$m = \tan\alpha$

$m = \tan 67° = 2.36$

4.2 The slope of a line is $-1/2$. What is the inclination?

$\tan\alpha = -1/2$

$\alpha = \tan^{-1}(-1/2)$

$\alpha = -26.57°$

$+180$

153.43°

5.3 Find the inclination of the line with the equation $4x - 3y = 5$.

$-3y = -4x + 5$

$y = \frac{4}{3}x - 5/3$

$\tan\alpha = 4/3$

$\alpha = 53.13°$

6.3 Find the slope-intercept form of a line with an inclination of 67° and a y-intercept of –3.

$m = \tan(67) = 2.36$

$(0, -3)$

$y = 2.36x + -3$

7.3 Find the slope intercept form of the line that has an x-intercept of 6 and has an inclination of 42°.

$m = \tan(42°)$ (6,0)

$m = .9$

$y - 0 = .9(x - 6)$

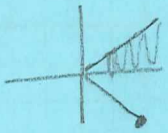
$y = .9x - 5.4$

Solve the following for $0° < x < 360°$. *Round to the hundredths if necessary.*

8.2 $\cos(x) = \frac{1}{2}$

$X = 60°$

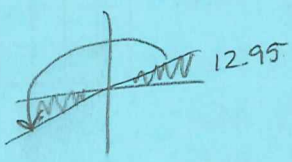
$X = 300°$



$360 - 60 = 300$

9.2 $\tan(x) = 0.23$

$\tan^{-1}(.23) = 12.95°$



$+180$

$192.95°$

10.2 $\sin(x) = 3$

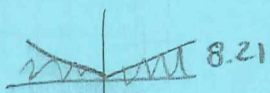
$\emptyset$

$-1 \leq \sin x \leq 1$

11.2 $\csc x = 7$

$\sin x = \frac{1}{7} \rightarrow \sin^{-1}(1/7)$

$X = 8.21°$



$180 - 8.21 = 171.79$

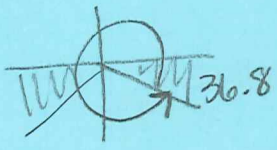
$X = 171.79°$

12.3 $-3\csc x - 1 = 4 + 1$

$\frac{3}{3}$

$\csc x = \frac{5}{-3}$

$\sin x = -3/5 \rightarrow \sin^{-1}(-3/5)$



$X = -36.87$

$+360$

$323.13°$

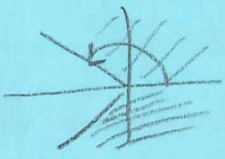
$180 + 36.87$

$216.87°$

13.2 $-5\sec x = \frac{7}{-5}$

$\cos = \frac{-5}{7}$

$\cos^{-1}(-5/7) = 135.58°$



$360 - 135.58°$

$224.42°$

Algebra III: *Hutschenreuter*
Chapter 8
REVIEW (part 2)

Name KEY

Period _____ Date _____

Simplify each expression.

1. $\dfrac{1-\sin^2 x}{\sin^2 x}$ $\dfrac{\cos^2}{\sin^2}$

$\cot^2 x$

2. $\cos\theta \cdot \csc\theta$

$\cos \cdot \dfrac{1}{\sin} = \dfrac{\cos}{\sin} = \cot\theta$

3. $\cot x\,(\sec x - \cos x)$

$\cot \cdot \sec - \cot \cdot \cos$

$\dfrac{\cos}{\sin} \cdot \dfrac{1}{\cos} - \dfrac{\cos}{\sin} \cdot \cos$

$\dfrac{1}{\sin} - \dfrac{\cos^2}{\sin} = \dfrac{\sin^2}{\sin}$

$= \sin x$

4. $\dfrac{\cot y + \tan y}{\csc^2 y}$ $\dfrac{\frac{\cos}{\sin} + \frac{\sin}{\cos}}{\frac{1}{\sin^2}} = \dfrac{\frac{\cos^2+\sin^2}{\sin\cdot\cos}}{\frac{1}{\sin^2}}$

$\left(\dfrac{1}{\sin\cdot\cos}\right)\left(\dfrac{\sin^2}{1}\right) = \dfrac{\sin}{\cos} = \tan y$

5. $\cot^2 x + \cos^2 x + \sin^2 x$

$\cot^2 + 1$

$\csc^2 x$

6. $(\tan^2\theta + 1)(\cos^2\theta - 1)$

$\sec^2 \cdot -\sin^2$

$\dfrac{1}{\cos^2} \cdot \dfrac{-\sin^2}{1} = \dfrac{-\sin^2}{\cos^2} = -\tan^2\theta$

7. $\sin x\,(1 + \cot^2 x)$

$\sin \cdot \csc^2$

$\sin \cdot \dfrac{1}{\sin^2} = \dfrac{1}{\sin} = \csc x$

8. $(1 - \sin A)\,(1 + \sin A)$

$1 - \sin^2 = \cos^2 A$

Solve each of the following for $0° \le x \le 360°$. Round your answers to the hundredths. Remember all answers.

9. $4\sin^2 x - 3 = 0$

$\sin^2 = 3/4$

$\sin x = \sqrt{3/4}$ $\quad \sin x = -\sqrt{3/4}$

$\sin^{-1}(\sqrt{.75})$ $\quad \sin^{-1}(-\sqrt{.75})$

$x = 60°$ $\quad x = -60$

$180 - 60$ $\quad 120°$ $\quad 300°$ $\quad 240°$

10. $6\tan^2 x + 2 = 3$

$\tan^2 = \frac{1}{6}$

$\tan x = \sqrt{1/6}$ or $-\sqrt{1/6}$

$22.21°$ $\quad -22.21°$

$+180$ $\quad +180$

$202.21°$ $\quad 157.79$

$+180$

$337.79°$

11. $7\sin x = \cos x$

$\frac{7\sin x}{\sin} = \frac{\cos x}{\sin}$

$7 = \cot$

$\tan x = 1/7$

$x = \tan^{-1}(1/7)$

$x = 8.13°$

$+180$

$188.13°$

12. $\cos^2 x + 5\cos x - 6 = 0$

$x^2 + 5x - 6 = 0$

$(x+6)(x-1) = 0$

$\cos x = -6$ $\quad \cos x = 1$

$\emptyset$ $\quad 0°$ $\quad 360°$

13. $2\cos^2 x + 3\sin x - 3 = 0$

$2x^2 + 3x - 3 = 0$

$\frac{-3 \pm \sqrt{9 - 4(2)(-3)}}{2(2)}$

$\frac{-3 \pm \sqrt{33}}{4}$

$x = .686$

$x = -2.19$

$\cos^{-1}(.686)$ $\quad \cos^{-1}(-2.19)$

$x = 46.67°$ $\quad \emptyset$

$360 - 46.67$

$313.33°$

14. $\sin\theta \cdot \sec\theta = 3\sec\theta$

$\sin \cdot \sec - 3\sec = 0$

$\sec(\sin - 3) = 0$

$\sec x = \frac{0}{1}$ $\quad \sin x = 3$

$\emptyset$

$\cos x = \frac{1}{0}$

undefined

15. $\cos\theta \cdot \tan\theta = 3\cos\theta$

$\cos \cdot \tan - 3\cos = 0$

$\cos(\tan - 3) = 0$

$\cos x = 0$ $\quad \tan x = 3$

~~90°~~ $\quad \tan^{-1}(3) = 71.57°$

~~270°~~ extraneous $\quad +180$

$251.57°$

$\tan = \frac{y}{x}$ $\quad x \neq 0$