MATH 1065 – Chapter 5 REVIEW

5.1 (29) $40.32°$ | DD → DMS

$40° + .32(60)\text{ Min} = 40°\ 19.2' = \boxed{40°\ 19'\ 12''}$

$.2(60) = 12''$

(73) $\theta = \frac{1}{3}$ Rad, $s = 2$ ft

$s = r\theta$

$2 = r\left(\frac{1}{3}\right)$

$\boxed{6\text{ Ft} = r}$

(96) $A = 100\text{ yd}^2$, $r = 15$ yd

$A = \frac{1}{2}r^2\theta$

$100 = \frac{1}{2}(15)^2\theta$

$\frac{8}{9}\text{ Rad} = \theta$

$\frac{8}{9}\text{ Rad}\left(\frac{180°}{\pi\text{ Rad}}\right) = \frac{160°}{\pi} \approx \boxed{50.93°}$

(98) $r = 2$ m, $t = 20$ sec, $s = 5$ m, Find w, v

$s = r\theta$

$5\text{m} = (2\text{m})\theta$

$2.5\text{ Rad} = \theta$

$w = \frac{\theta}{t} = \frac{2.5\text{ Rad}}{20\text{ s}}$ $\boxed{.125\ \frac{\text{Rad}}{\text{s}}}$

$v = rw$

$v = 2\text{m}\left(.125\ \frac{\text{Rad}}{\text{s}}\right) = \boxed{.25\ \frac{\text{m}}{\text{s}}}$

(99) diam $= 26$ in, $v = 35\ \frac{\text{miles}}{\text{Hr}}$, Find rpm

$r = 13$ in

$v = 35\ \frac{\text{miles}}{\text{Hr}}\left(\frac{5280\text{ Ft}}{1\text{ mile}}\right)\left(\frac{12\text{ in}}{1\text{ Ft}}\right)\left(\frac{1\text{ Hr}}{60\text{ Min}}\right) = 36{,}960\ \frac{\text{in}}{\text{Min}}$

$v = rw$

$36960 = 13w$

$2843.077\ \frac{\text{Rad}}{\text{Min}} = w$

$w = 2843.077\ \frac{\text{Rad}}{\text{Min}}\left(\frac{1\text{ Rev}}{2\pi\text{ Rad}}\right) = \boxed{452.5\ \frac{\text{Rev}}{\text{Min}}}$

5.2 (17) $\left(-\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right)$ II, θ | UNIT CIRCLE

$\sin\theta = \frac{\sqrt{2}}{2}$, $\cos\theta = -\frac{\sqrt{2}}{2}$, $\tan\theta = -1$

$\csc\theta = \sqrt{2}$ $\sec\theta = -\sqrt{2}$ $\cot\theta = -1$

(79) $(2, -3)$ IV

$r^2 = x^2 + y^2 = 4 + 9 = 13$

$r = \sqrt{13}$

$\sin\theta = \frac{-3}{\sqrt{13}} = \left(\frac{-3\sqrt{13}}{13}\right)$ $\cos\theta = \frac{2}{\sqrt{13}} = \left(\frac{2\sqrt{13}}{13}\right)$

$\tan\theta = \left(-\frac{3}{2}\right)$ $\cot\theta = \left(-\frac{2}{3}\right)$ $\sec\theta = \left(\frac{\sqrt{13}}{2}\right)$ $\csc\theta = \left(-\frac{\sqrt{13}}{3}\right)$

5.3 (39) $\sin\theta = \frac{1}{2}$ $\cos\theta = \frac{\sqrt{3}}{2}$ I

$\tan\theta = \frac{1/2}{\sqrt{3}/2} = \frac{1}{\sqrt{3}} = \left(\frac{\sqrt{3}}{3}\right)$ $\cot\theta = (\sqrt{3})$ $\sec\theta = \frac{2}{\sqrt{3}} = \left(\frac{2\sqrt{3}}{3}\right)$ $\csc\theta = (2)$

(57) $\tan\theta = -\frac{1}{3}$ $\sin\theta > 0$ II

$\tan\theta = \frac{1}{3} = \frac{y}{x}$ Use Point $(-3, 1) \Rightarrow r = \sqrt{10}$

$\sin\theta = \frac{y}{r} = \left(\frac{\sqrt{10}}{10}\right)$ $\cos\theta = \frac{x}{r} = \left(-\frac{3\sqrt{10}}{10}\right)$

$\cot\theta = (-3)$ $\sec\theta = \left(-\frac{\sqrt{10}}{3}\right)$ $\csc\theta = (\sqrt{10})$

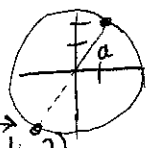
(115) $f(\theta) = \tan\theta$ $f(a) = 2$

ODD

a) $f(-a) = -f(a) = (-2)$

b) $f(a) + f(a+\pi) + f(a+4\pi)$

$2 + 2 + 2 = (6)$



5.4 (17) $y = -\frac{1}{2}\cos\left(\frac{3}{2}x\right)$ | Amplitude $= |A| = \left|-\frac{1}{2}\right| = \frac{1}{2}$

Period $= \left|\frac{2\pi}{B}\right| = \frac{2\pi}{3/2} = \frac{4\pi}{3}$

(19) $y = \frac{5}{3}\sin\left(-\frac{2\pi}{3}x\right)$

Amplitude $= \frac{5}{3}$

Period $= \frac{2\pi}{2\pi/3} = 3$

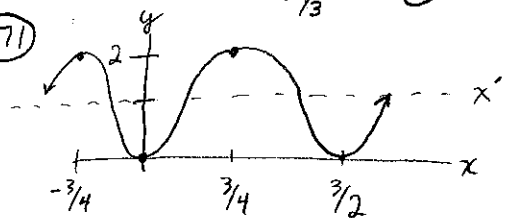
(59) Sine Curve with Amplitude $= 3$, Period $= \pi$

$A = 3$ (or -3)

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

$y = 3\sin(2x)$

(71)



D = 1 A = −1 [Reflected COSINE]

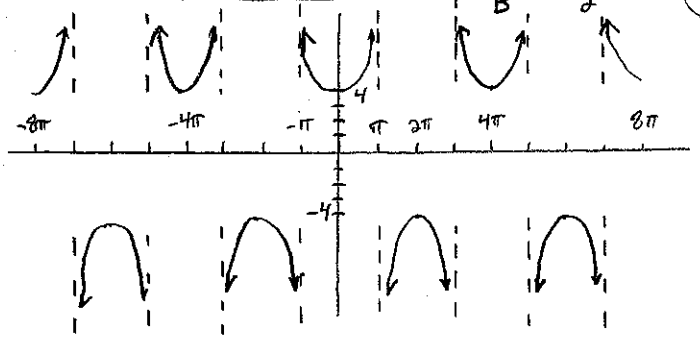
$\frac{2\pi}{B} = \frac{3}{2} \Rightarrow B = \frac{4\pi}{3}$

$y = -\cos\left(\frac{4\pi}{3}x\right) + 1$

5.5 (14) List Vertical Asymptotes on $[-2\pi, 2\pi]$ for $y = \csc x$

$y = \frac{1}{\sin x}$ is undefined when $\sin x = 0 = y$ on Unit circle.

$x = -2\pi, -\pi, 0, \pi, 2\pi$



(29) $y = 4\sec\left(\frac{1}{2}x\right)$

$\text{Per} = \frac{2\pi}{B} = \frac{2\pi}{1/2} = 4\pi$

$\frac{1}{4}\text{Per} = \pi$

5.6 (13) $y = -3\sin\left(-2x + \frac{\pi}{2}\right)$

Amplitude $= |A| = |-3| = 3$

Period $= \left|\frac{2\pi}{B}\right| = \left|\frac{2\pi}{-2}\right| = \pi$

Phase Shift: $-2x + \pi/2 = 0$

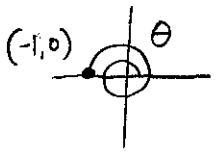
$-2x = -\pi/2$

$x = \pi/4$

Right $\frac{\pi}{4}$ Units

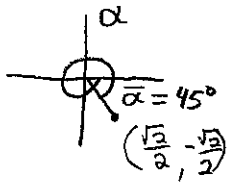
5.R (19) $\cos 540° - \tan(-405°)$

$\cos\theta - \tan\alpha$



$-1 - (-1)$

0



	30° π/6	45° π/4	60° π/3
sin	1/2	√2/2	√3/2
cos	√3/2	√2/2	1/2
tan	√3/3	1	√3