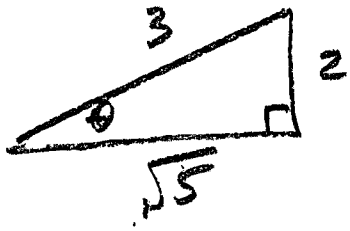
Mth 113 4-18-13 Class Notes

(19) PS 147 $\sec\left[\sin^{-1}\left(-\frac{2}{3}\right)\right]$




$\Downarrow$ $\frac{1}{\cos\theta}$

$\Downarrow$ Quadrant IV

| S | A |
|---|---|
| T | C |

$\Rightarrow \sec\theta = +\frac{3}{\sqrt{5}} = \boxed{\frac{3\sqrt{5}}{5}}$

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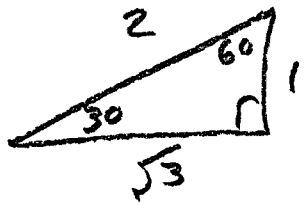
Review for Qu. 3 4

(31) Pg 147

$$\sin^{-1}\left(\sin\frac{\pi}{6}\right)$$

$$\Downarrow$$

$$\sin 30^\circ$$




$$\sin^{-1}\left(\frac{1}{2}\right)$$

$$\Downarrow$$

$$QI \Rightarrow \boxed{\frac{\pi}{6}}$$

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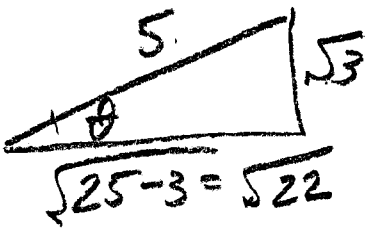
(21)

$$\cot\left[\sin^{-1}\left(\frac{\sqrt{3}}{5}\right)\right]$$

QI or II

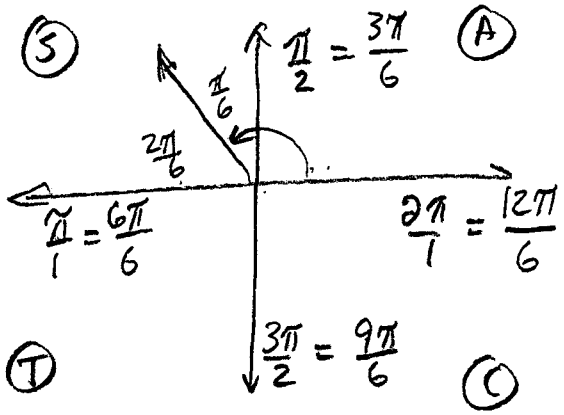



$\therefore \cot\theta$

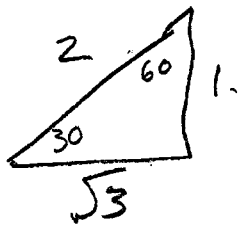
$$= \frac{\sqrt{22}}{\sqrt{3}} = \boxed{\frac{\sqrt{66}}{3}}$$

66
/ \
QI 6
/ \
2 3

(33) $\text{Arcsin}\left(\cos\frac{2\pi}{3}\right) = \text{Arcsin}\left(\cos\frac{4\pi}{6}\right)$




$\theta' = \frac{\pi}{3}$ $\quad \cos\frac{\pi}{3} = -\frac{1}{2}$




LOOK

* $\text{ARCSin}\left(-\frac{1}{2}\right)$

QI or ~~QIV~~ so

Arc of − MUST

Q IV

$\theta' = 30^\circ = \frac{\pi}{6}$

$\theta = -\frac{\pi}{6}$

(32) pg 118

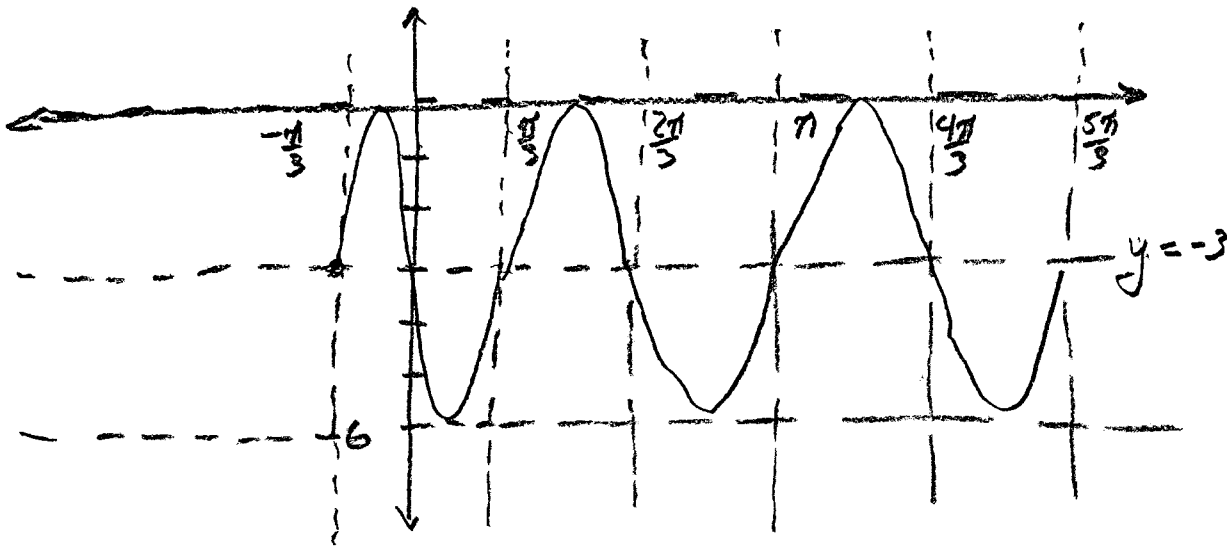
$$y = 3\sin(3x + \pi) - 3$$

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

Amp $= |3|$ Period $= \frac{2\pi}{|3|} = \frac{2}{3}\pi$

PHASE SHIFT $= \frac{\pi}{3}$ to left

VERT. SHIFT $= -3$



(38) $(0.8 + 0.6i)^8$ Nearest tenth

Pg 273

$$|r| = \sqrt{(.8)^2 + (.6)^2} = 1$$

(+,+) QUAD I

$$\Rightarrow \theta = \theta' = \tan^{-1}\left(\frac{.6}{.8}\right) = 36.8699^\circ$$

$$\therefore (1\,\text{Cis}\,36.8699)^8 \quad \text{De Moivre's}$$

$$= 1^8\,\text{Cis}(8 \cdot 36.8699)$$

$$= \boxed{1\,\text{Cis}(294.9592)} \quad \text{Polar}$$

$$\Rightarrow 1\cos(294.9592) + 1\sin(294.9592)\,i$$

$$= .4220 - 0.9066\,i$$

$$= \boxed{.4 - .9\,i}$$

De Moivre's Theorem!

# INVERSES OF FUNCTIONS

$f(x)$ $\quad y = 2x + 3$ (dv = y, iv = x; y: mi; x: $\frac{mi}{hr}$; 2: hr)

$y^{-1} \Rightarrow x = 2y + 3$

$x - 3 = 2y$

$\frac{x-3}{2} = y$ ($\frac{hr}{mi}$, mi)

$\therefore y^{-1} \Rightarrow y = \frac{1}{2}x - \frac{3}{2}$ $\quad f^{-1}(x)$ (hr; mi)

| x (hr) | y (mi) |
|---|---|
| -2 | -1 |
| -1 | 1 |
| 0 | 3 |
| 1 | 5 |
| 2 | 7 |

| x (mi) | y (hr) |
|---|---|
| -1 | -2 |
| 1 | -1 |
| 3 | 0 |
| 5 | 1 |
| 7 | 2 |