Ch.2 Form A

(13) $\cos\Theta = 0.8910$

$\Theta = \cos^{-1} 0.8910$

$\Theta \approx 27.00082337 \approx 27.0°$

(14) $\cot\Theta = 5.937006$

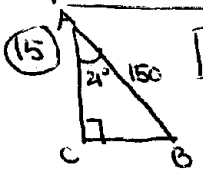
$\Theta = \frac{1}{\cot\Theta} = \frac{1}{5.937006}$

$\tan\Theta = \frac{1}{5.937006}$

$\Theta = \tan^{-1}\left(\frac{1}{5.937006}\right)$

$\Theta \approx 9.560877263 \approx 9.6°$

(15)



$\angle B = 90 - 21 = 69°$

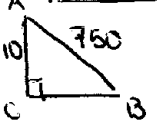
$\sin 21° = \frac{a}{150} \Rightarrow a = 150 \sin 21°$

$a \approx 53.75519243 \approx 54 \text{ units}$

$\cos 21° = \frac{b}{150} \Rightarrow b = 150 \cos 21°$

$b \approx 140.0337064 \approx 140 \text{ units}$

(16) $b = 610$, $c = 750$



$a^2 + b^2 = c^2$ 190400

$a = \sqrt{750^2 - 610^2}$

≈ 436.3484846

$\approx 440 \text{ units}$

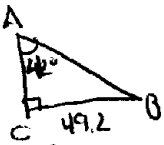
$\angle B \Rightarrow \sin B = \frac{610}{750}$

so $B = \sin^{-1}\frac{610}{750} \approx 54.42289745 \approx 54°$

$\angle A \Rightarrow \cos A = \frac{610}{750}$ so $A = \cos^{-1}\frac{610}{750} \approx 35.57710255$

$\approx 36°$

(17) $A = 42°$, $a = 49.2$



$\angle B = 90 - 42 = 48°$

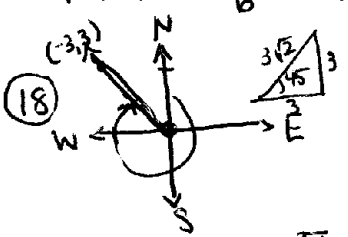
$\sin 42° = \frac{49.2}{c} \Rightarrow \frac{c}{49} = \frac{1}{\sin 42} \Rightarrow c = \frac{49.2}{\sin 42} \approx 73.528246$

$\approx 73.5 \text{ units}$

$\tan 42° = \frac{49.2}{b} \Rightarrow b \approx \frac{49.2}{\tan 42°} \approx 54.64213573$

$\approx 54.6 \text{ units}$

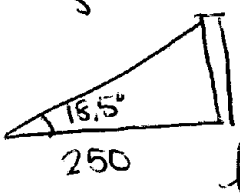
(18)



$180 + 270 + 45$

$= 315°$

(19)



$\tan 18.5° = \frac{h}{250}$

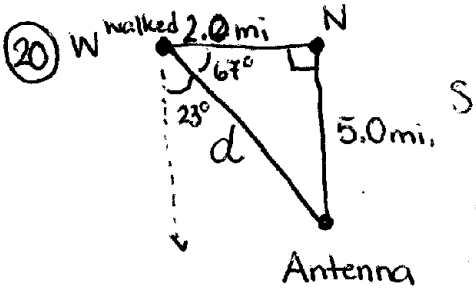
$h = 250 \tan 18.5$

≈ 83.64882988

$\approx 84 \text{ feet}$

Ch. 2 Form A cont'd

(20)



$\sin 67° = \frac{5.0}{d}$

$\Delta O,$

$d = \frac{5.0}{\sin 67°}$

$d \approx 5.431801887$

$\doteq 5.4 \text{ mi.}$

Ch.3 Form A

① Coterminal w/ $\pi/6$

2π is another revolution

$2\pi n$ are multiples of 2π

so, $\boxed{c.\ \frac{\pi}{6} + 2\pi n}$

② $110 \cdot \frac{\pi}{180} = \boxed{\frac{11\pi}{18}}$ ③ $300 \cdot \frac{\pi}{180} = \boxed{\frac{5\pi}{3}}$

④ $125 \cdot \frac{\pi}{180} = \boxed{\frac{25\pi}{36}}$ ⑤ $-5\pi/18 \cdot \frac{180}{\pi} = \boxed{-50°}$

⑥ $\frac{8\pi}{3} \cdot \frac{180}{\pi} = \boxed{480°}$ ⑦ $\frac{2\pi}{3} \cdot \frac{180}{\pi} = \boxed{120°}$

⑧ $\sin \frac{4\pi}{3}$ note: $\frac{4\pi}{3} \cdot \frac{180}{\pi} = 240°$ $\Theta' = 60°$ in QIII

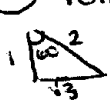
$\boxed{\sin \frac{4\pi}{3} = -\frac{\sqrt{3}}{2}}$

This is not a calculator exercise!

⑨ $\sec \pi/4$ Note: $\pi/4 = 45°$

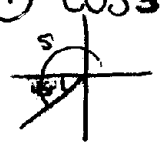
$\boxed{\sec \pi/4 = \sqrt{2}}$

⑩ $\tan 7\pi/3$ Note: $\frac{7(180)}{3} = 420°$ Coterminal $420 - 360 = 60°$ QI

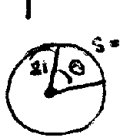


$\boxed{\tan 7\pi/3 = \sqrt{3}}$

⑪ $\cos s = -\frac{\sqrt{2}}{2}$ in $[\pi, 3\pi/2]$ Note: In QIII Ratios are 45°



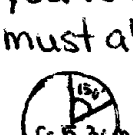
$\Theta' = \pi/4$ so $\boxed{s = 5\pi/4}$

⑫ 

$\Theta = 18/21 = 6/7$ rad

$\frac{6}{7} \cdot \frac{180}{\pi} \approx 49.11066815 \approx \boxed{49°}$

⑬ If $r = 2r$ then Θ is halved because you've divided the right by 2, so you must also divide Θ by 2.

⑭ 

$A_s = \frac{\Theta r^2}{2} = \frac{5\pi}{6} \cdot \frac{(5.3)^2}{2} \approx 36.769724$

$\approx \boxed{36.8\text{cm}^2}$

⑮ $\sin 1.2275 \approx 0.9416502630 \approx \boxed{0.9417}$

⑯ $\sec 0.8902 \approx \frac{1}{\cos 0.8902} \approx 1.5891768$

$\approx \boxed{1.5892}$

⑰ $\tan s = 0.790325578$ $[0, \pi/2]$

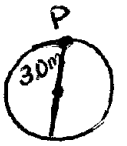
$s = \tan^{-1} 0.790325578 \approx \boxed{0.6688140003 \text{ rad}}$

For the #15-17 did you remember to put your calculator in radian mode?

⑱ 

$\Theta = \frac{15}{18} = \frac{5}{6}$ rad. $\frac{5}{6} \cdot \frac{180}{\pi} = 47.7464$

$\approx \boxed{48°}$

⑲ 

$\omega = 35 \frac{\text{rev}}{\text{min}} \cdot \frac{2\pi \text{ rad}}{\text{rev}} = 70\pi$

$V_p = \omega r = 70\pi \cdot \frac{30}{2} = \boxed{105\pi \frac{\text{in}}{\text{min}}}$

⑳ 

$t = 15$sec $V_{Belt} = \frac{s}{t} = \frac{40}{15} = \frac{8}{3} \frac{\text{cm}}{\text{sec}}$

$V = \omega r$

$\omega = \frac{V}{r} = \frac{8/3}{14.5} = \frac{8}{3} \cdot \frac{1}{14.5} \approx 0.18$

$\boxed{\approx 0.18 \text{ rad/sec}}$

Ch.4 Form A

① Period: π Thru: $(0,0)$ $\boxed{\tan x}$

② $\boxed{\tan \& \cot}$ have range $(-\infty, \infty)$

③ $\sec x$ range is $(-\infty, -1] \cup [1, \infty)$

$\cos x$ range is $[-1, 1]$

so $\sec x = 2$ is possible while $\cos x$ can't be > 1.

④ $y = 3\cot x$ and $y = \frac{1}{4\tan x}$ aren't the same b/c the stretching translation is different. $\boxed{\text{False}}$

⑤ The min. val. of $y = 3 + \cos 2x$ is $-1 + 3 = \boxed{2}$ This is a result of vertical translation.

⑥ Eq. of cosine f(n) w/ Period $-\pi$ & amplitude 4

$\boxed{d.\ y = 4\cos 2x}$

4 ↑ amplitude; $\frac{2\pi}{B}$ ↑ Period

⑦ $y = -3\sin x$ | Amplitude: 3 | Vertical: Oar none | Period: 2π | Phase: Oar none

Ch.4 Form A Cond

(8) $y = \cos 2x + 3$

Amplitude: 1
Period: π
Vertical: +3
Phase Shift: none

Amplitude; Period $\frac{2\pi}{B}$; vertical

(9) $y = \sec\left(x + \frac{\pi}{2}\right)$

Amplitude: Doesn't Apply
Period: 2π
Vertical: 0 or none
Phase Shift: $-\frac{\pi}{2}$ or $\frac{\pi}{2}$ left

No amplitude, only stretching which is 1. Period remains 2π. Phase shift $-\left(\frac{\pi}{2}\right)$

(10) $y = 3 - \tan 2x$

Amplitude: Doesn't App
Period: $\frac{\pi}{2}$
Vertical: +3 or 3 up
Phase Shift: 0 or none

Vertical; Period $\frac{\pi}{B}$; No phase b/c nothing added to x

(11) $y = 3\cos 2\left(x - \frac{\pi}{4}\right)$

Amplitude: 3
Period: π
Vertical: 0 or none
Phase Shift: $\frac{\pi}{4}$ right

Amplitude; Period $\frac{2\pi}{B}$; Phase Shift $-(+\frac{\pi}{4})$ right

(12) $y = 4 - \frac{3}{4}\sin(3x - \pi)$

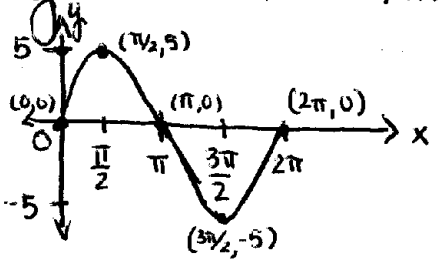
Factor first

$= 4 - \frac{3}{4}\sin 3\left(x - \frac{\pi}{3}\right)$

Amplitude: $\frac{3}{4}$
Period $\frac{2\pi}{3}$
Vertical: +4 or 4 up
Phase Shift: $\frac{\pi}{3}$ right

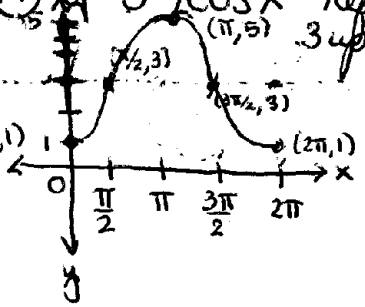
Vertical; Amplitude; Period $\frac{2\pi}{B}$; Phase Shift Right

(13) $y = 5\sin x$ Sine w/ amplitude 5



x	y = sin x	y = 5 sin x
0	0	0
$\pi/2$	1	5
π	0	0
$3\pi/2$	-1	-5
2π	0	0

(14) $y = 3 - 2\cos x$ Reflected, vertical translated 3 up with amplitude 2



x	y = cos x
0	1
$\frac{\pi}{2}$	0
π	-1
$3\pi/2$	0
2π	1