PC CH 4-5 REVIEW FOR Q3 RETEST

1. (a) TERMINATES WHERE QUAD 1 AND 2 MEET

$\frac{5\pi}{2} \cdot \frac{180}{\pi} = \boxed{450^\circ}$

(b) TERMINATES IN QUAD 3

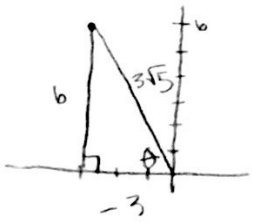
$-135^\circ \cdot \frac{\pi}{180^\circ} = \boxed{-\frac{3\pi}{4}}$

(c) TERMINATES IN QUAD 2

$\frac{7\pi}{10} \cdot \frac{180}{\pi} = \boxed{126^\circ}$

2. (a) $\sin 30 = \boxed{\frac{1}{2}}$ (b) $\sec\left(-\frac{\pi}{3}\right) = \frac{1}{\cos\left(-\frac{\pi}{3}\right)} = \frac{1}{\frac{1}{2}} = \boxed{\frac{2}{\sqrt{3}}}$ (c) $\tan\left(-\frac{2\pi}{3}\right) = -\frac{\sqrt{3}}{2} \cdot -\frac{2}{1} = \boxed{\sqrt{3}}$

3.



$c^2 = 6^2 + (-3)^2$

$c^2 = 36 + 9$

$c^2 = 45$

$c = \sqrt{45}$

$= 3\sqrt{5}$

$\sin\theta = \frac{6}{3\sqrt{5}} = \boxed{\frac{2}{\sqrt{5}}}$ $\csc\theta = \boxed{\frac{\sqrt{5}}{2}}$

$\cos\theta = \frac{-3}{3\sqrt{5}} = \boxed{\frac{-1}{\sqrt{5}}}$ $\sec\theta = \boxed{-\sqrt{5}}$

$\tan\theta = \frac{6}{-3} = \boxed{-2}$ $\cot\theta = \boxed{-\frac{1}{2}}$

4. TRANSFORMATIONS: $-2\sin 3\left(x - \frac{\pi}{9}\right)$

- REFLECTION OVER X-AXIS
- V. STRETCH BY A FACTOR OF 2
- H. SHRINK BY A FACTOR OF $\frac{1}{3}$
- TRANSLATION RIGHT $\frac{\pi}{9}$

- AMP = 2
- P.S. = RIGHT $\frac{\pi}{9}$
- V.S. = NONE
- PER = $\frac{2\pi}{3}$

5. (a) 50° OR .873 (b) 45° OR $\frac{\pi}{4}$

6. (a) $\csc x = -1$

$\sin x = -1$

$\boxed{x = \frac{3\pi}{2}}$

(b) $\cot x = -\sqrt{3}$

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

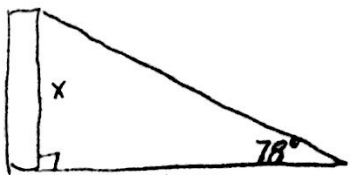
$\boxed{x = \frac{5\pi}{6}, \frac{11\pi}{6}}$

(c) $\sin x = .5 \left(\frac{1}{2}\right)$

$\boxed{x = \frac{\pi}{6}, \frac{5\pi}{6}}$

$S = r\theta$ * θ MUST BE IN RADIANS

$S = 2\left(\frac{2\pi}{3}\right) = \boxed{\frac{4\pi}{3} \text{ OR } 4.19}$

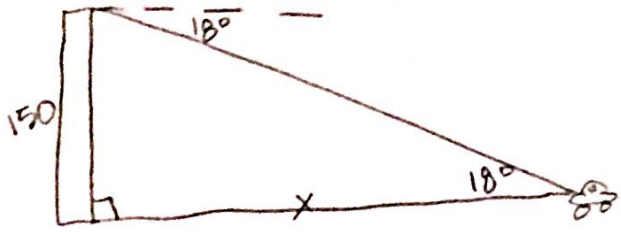


$\tan 78 = \frac{x}{100}$

$100 \tan 78 = x$

$\boxed{x = 470.5 \text{ m}}$

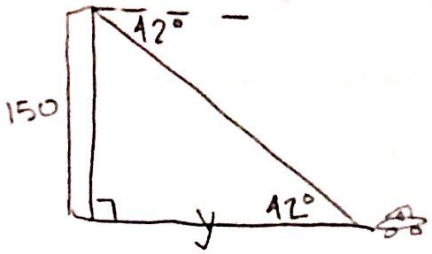
9.



$\tan 18 = \frac{150}{x}$

$x = \frac{150}{\tan 18}$

$x = 461.7$



$\tan 42° = \frac{150}{y}$

$y = \frac{150}{\tan 42}$

$y = 166.6$

TRAVELS:

$461.7 - 166.6$

$= \boxed{295.1 \text{ FT}}$

9. (a) $\cos^2 2x - \cos^2 x = \sin^2 x - \sin^2 2x$

$(1 - 2\sin^2 x)^2 - \cos^2 x =$

$(1 - 2\sin^2 x)(1 - 2\sin^2 x) - \cos^2 x =$

$1 - 4\sin^2 x + 4\sin^4 x - \cos^2 x =$

$4\sin^4 x - 4\sin^2 x + 1 - \cos^2 x =$

$4\sin^2 x(\sin^2 x - 1) + \sin^2 x =$

($\sin^2 x - 1 = -\cos^2 x$)

$-4\sin^2 x \cos^2 x + \sin^2 x =$

$-\sin^2 2x + \sin^2 x =$

$\sin^2 x - \sin^2 2x = \sin^2 x - \sin^2 2x$ □

THIS IS HARDER THAN ANY YOU'D SEE, BUT IT'S GOOD PRACTICE W/ IDENTITIES

(b) $\csc x - \cos x \cot x = \sin x$

$\frac{1}{\sin x} - \cos x \cdot \frac{\cos x}{\sin x} =$

$\frac{1}{\sin x} - \frac{\cos^2 x}{\sin x} =$

$\frac{1 - \cos^2 x}{\sin x} =$

$\frac{\sin^2 x}{\sin x} =$

$\sin x = \sin x$ □

11. (a) $\sin^2 x - 2\sin x = 3$

$\sin^2 x - 2\sin x - 3 = 0$

$(\sin x - 3)(\sin x + 1) = 0$

~~$\sin x = 3$~~ $\sin x = -1$

$\boxed{x = \frac{3\pi}{2}}$

(IF ALL SOLUTIONS.. $\frac{3\pi}{2} + 2\pi n$)

(b) $\cos 2x + \cos x = 2$

$2\cos^2 x - 1 + \cos x - 2 = 0$

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

$\cos^2 x + \cos x - 6 = 0$

$(\cos x + \frac{3}{2})(\cos x - \frac{2}{2}) = 0$

$(\cos x + \frac{3}{2})(\cos x - 1) = 0$

~~$\cos x = \frac{3}{2}$~~ $\cos x = 1$

$\boxed{x = 0, 2\pi}$

(c) $2\cos x = 1$

$\cos x = \frac{1}{2}$

$\boxed{x = \frac{\pi}{3}, \frac{5\pi}{3}}$

12. (a) $\cos(94 - 18) = \boxed{\cos 76^\circ}$

(b) $\sin\left(\frac{\pi}{3} - \frac{\pi}{7}\right) = \sin\left(\frac{7\pi - 3\pi}{21}\right) = \boxed{\sin\left(\frac{4\pi}{21}\right)}$

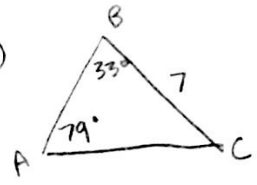
(c) $\sin 75^\circ = \sin(30^\circ + 45^\circ) = \sin 30\cos 45 + \cos 30 \sin 45$

$= \frac{1}{2} \cdot \frac{\sqrt{2}}{2} + \frac{\sqrt{3}}{2} \cdot \frac{\sqrt{2}}{2} = \boxed{\frac{\sqrt{2} + \sqrt{6}}{4}}$

(d) $\cos\left(\frac{7\pi}{12}\right) = \cos\left(\frac{3\pi}{12} + \frac{4\pi}{12}\right) = \cos\left(\frac{\pi}{4} + \frac{\pi}{3}\right) = \cos\frac{\pi}{4}\cos\frac{\pi}{3} - \sin\frac{\pi}{4}\sin\frac{\pi}{3}$

$= \frac{\sqrt{2}}{2} \cdot \frac{1}{2} - \frac{\sqrt{2}}{2} \cdot \frac{\sqrt{3}}{2} = \boxed{\frac{\sqrt{2} - \sqrt{6}}{4}}$

13. (a)



$\frac{\sin 79}{7} = \frac{\sin 33}{b}$

$\boxed{b = 3.88}$

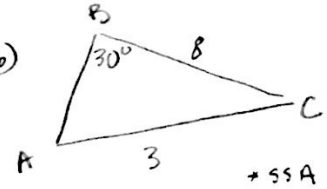
$C = 180 - (33 + 79)$

$\boxed{C = 68^\circ}$

$\frac{\sin 79}{7} = \frac{\sin 68}{c}$

$\boxed{c = 6.61}$

(b)



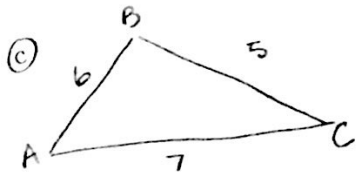
* SSA

$\frac{\sin 30}{3} = \frac{\sin A}{8}$

$1.33 = \sin A$

NOT POSSIBLE → $\boxed{\text{NO TRIANGLE}}$

(c)



$5^2 = 6^2 + 7^2 - 2(6)(7)\cos A$

$25 = 85 - 84\cos A$

$-60 = -84\cos A$

$.714 = \cos A$

$\boxed{A = 44.4^\circ}$

$7^2 = 6^2 + 5^2 - 2(6)(5)\cos B$

$49 = 61 - 60\cos B$

$-12 = -60\cos B$

$.2 = \cos B$

$\boxed{B = 78.5^\circ}$

$\boxed{C = 57.1^\circ}$

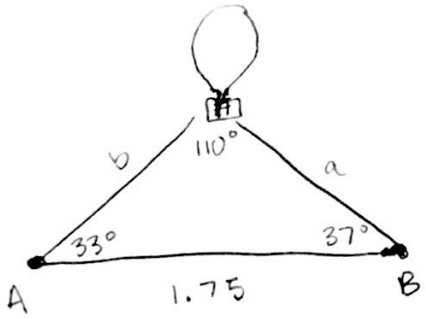
14. (a) $s = \frac{3+5+6}{2} = 7$

$A = \sqrt{7(7-3)(7-5)(7-6)}$

$A = \sqrt{56} = \boxed{7.48}$

(b) $A = \frac{1}{2}(10)(6)\sin 50 = \boxed{22.98}$

15.



$\frac{\sin 110}{1.75} = \frac{\sin 33}{a}$

$a = \boxed{1.01 \text{ MILES (PERSON B TO BALLOON)}}$

$\frac{\sin 110}{1.75} = \frac{\sin 37}{b}$

$b = \boxed{1.12 \text{ MILES (PERSON A TO BALLOON)}}$