6/ b) $\perp$ to $7x - 4y = 19$ through $(-5, -1)$

$m = -\frac{A}{B} = \frac{+7}{+4}$

$\perp m = \boxed{-\frac{4}{7}}$

$y - y_1 = m(x - x_1)$

$y + 1 = -\frac{4}{7}(x + 5)$

$y + 1 = -\frac{4}{7}x - \frac{20}{7}$

$y = -\frac{4}{7}x - \frac{27}{7}$

a) $y = -\frac{2}{5}x + \frac{34}{5}$

TRIG REVIEW

$$\frac{\cos\frac{4\pi}{3} - \cot^2\left(-\frac{5\pi}{6}\right)}{\sin\frac{3\pi}{2}\,\sec\frac{15\pi}{4}} = \frac{-\frac{1}{2} - \left(\sqrt{3}\right)^2}{-1 \cdot \sqrt{2}}$$

$1\frac{1}{3}$ $\quad$ $1\frac{1}{2}$ $\quad$ $3\frac{3}{4}$

$$= \frac{-\frac{1}{2} - 3}{-\sqrt{2}}$$

$$= \frac{+\frac{7}{2}}{+\frac{\sqrt{2}}{1}} = +\frac{7}{2} \cdot +\frac{1}{\sqrt{2}}$$

$$= \frac{7\sqrt{2}}{2\sqrt{2}\cdot\sqrt{2}}$$

$$= \boxed{\frac{7\sqrt{2}}{4}}$$

		tan
0°	0	
30°	π/6	$\frac{\sqrt{3}}{3}$
45°	π/4	
60°	π/3	
90°	π/2	

$$\frac{3}{\sqrt{3}}\cdot\frac{\sqrt{3}}{\sqrt{3}} = \frac{3\sqrt{3}}{3}$$

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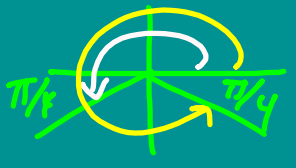
Find the angles where:

$\cos\theta = -\frac{\sqrt{3}}{2}$

$\frac{5\pi}{6}, \frac{7\pi}{6}$

$\csc\theta = -\sqrt{2}$



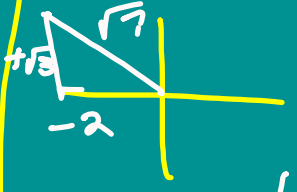
$\frac{5\pi}{4}, \frac{7\pi}{4}$

$\sin\theta = \frac{y}{r}$ $\quad \csc\theta = \frac{r}{y}$

$\cos\theta = \frac{x}{r}$ $\quad \sec\theta = \frac{r}{x}$

$\tan\theta = \frac{y}{x}$ $\quad \cot\theta = \frac{x}{y}$

Find $\cot\theta$ given $\sec\theta = \frac{-\sqrt{7}}{2}$ r, x, $\sin\theta > 0$



$y^2 + 4 = 7$

$\sqrt{y^2} = \sqrt{3}$

$\cot\theta = \frac{x}{y} = \frac{-2}{\sqrt{3}}$

$= \frac{-2\sqrt{3}}{3}$

Inverse Trig Functions

$\cos^{-1} x$, $\sec^{-1} x$, $\cot^{-1} x$ — All

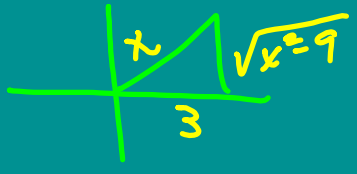
$\csc^{-1} x$, $\sin^{-1} x$, $\tan^{-1} x$ —

$y = \sin\theta$

$\theta = \sin^{-1} y$

$\sin^{-1}\left(-\frac{1}{2}\right) = -\frac{\pi}{6}$

$\tan\left(\cos^{-1}\frac{3}{x}\right)$ $\frac{x}{r}$

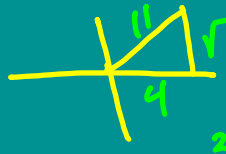


$9 + y^2 = x^2$

$\sqrt{y^2} = \sqrt{x^2 - 9}$

$\tan\theta = \frac{y}{x} = \frac{\sqrt{x^2-9}}{3}$

$\csc\left(\sec^{-1}\frac{11}{4}\right)$ $\frac{r}{x}$



$16 + y^2 = 121$

$\sqrt{y^2} = \sqrt{105}$

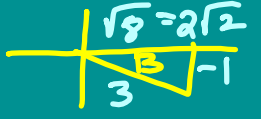
$\csc\theta = \frac{r}{y} = \frac{11}{\sqrt{105}} = \frac{11\sqrt{105}}{105}$

$\tan A = \frac{7y}{3x}$ & $\csc B = \frac{-3}{r}$ $\frac{r}{y}$

$\pi < A < \frac{3\pi}{2}$ ← III

$\frac{3\pi}{2} < B < 2\pi$ ← IV

Find $\cos(A-B)$.



$\cos(A-B) = \cos A \cos B + \sin A \sin B$

$\left(\frac{-3}{\sqrt{58}}\right)\left(\frac{2\sqrt{2}}{3}\right) + \left(\frac{-7}{\sqrt{58}}\right)\left(\frac{-1}{3}\right)$

$\therefore$

$= \frac{-6\sqrt{2} + 7}{3\sqrt{58}}$

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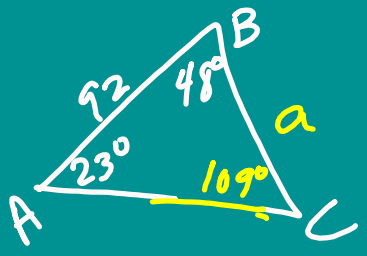
$$\csc\theta = \frac{1}{\sin\theta} \qquad \tan\theta = \frac{\sin\theta}{\cos\theta} \qquad \sin^2\theta + \cos^2\theta = 1$$

$$\sec\theta = \frac{1}{\cos\theta} \qquad \cot\theta = \frac{\cos\theta}{\sin\theta} \qquad 1 + \tan^2\theta = \sec^2\theta$$

$$\cot\theta = \frac{1}{\tan\theta} \qquad\qquad 1 + \cot^2\theta = \csc^2\theta$$

$y = a$ ____ $(bx+c)+d$

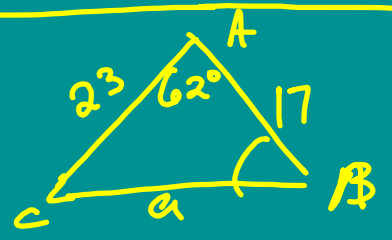
	sin / cos	sec / csc	tan / cot
amp	$\lvert a \rvert$	NA	NA
period	$\frac{2\pi}{b}$	$\frac{2\pi}{b}$	π/b
P.S.	$bx+c=0$	"	"
V.S.	d	"	"



Find a.

$$\frac{a}{\sin 23^\circ} = \frac{92}{\sin 99^\circ}$$

$$\frac{\sin A}{a} = \frac{\sin B}{b}$$



$$a^2 = b^2 + c^2 - 2bc\cos A$$

$$= 23^2 + 17^2 - 2(23)(17)\cos 62^\circ$$

$$\sqrt{a^2} = \sqrt{\quad}$$

Find B.

Find smallest remaining angle next.