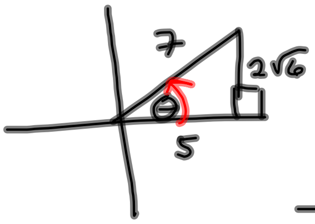
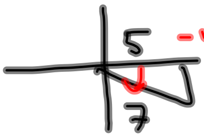
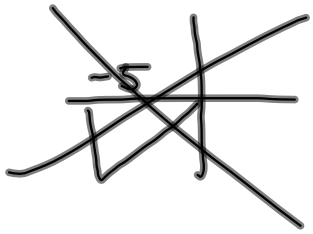
$\cos\theta = \frac{5}{7}$

$\sqrt{7^2 - 5^2} = \sqrt{49-25} = \sqrt{24}$

$= 2\sqrt{6}$



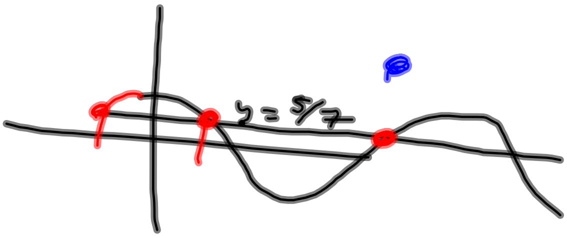




3c.

$\cos^{-1}\left(\frac{5}{7}\right) \approx 44.4153086^\circ$

$\approx 44.4153^\circ$



$\{44.4153^\circ + 360^\circ n \mid n \in \mathbb{Z}\}$

OR

$\{-44.4153^\circ + 360^\circ n \mid n \in \mathbb{Z}\}$

$44.4153^\circ + 360^\circ n$, $n = 0, \pm 1, \pm 2, \pm 3, \ldots$

OR

$-44 \ldots$ etc.

$10\sin\left(\frac{\pi}{8}x - \frac{\pi}{4}\right) + 15$

Period

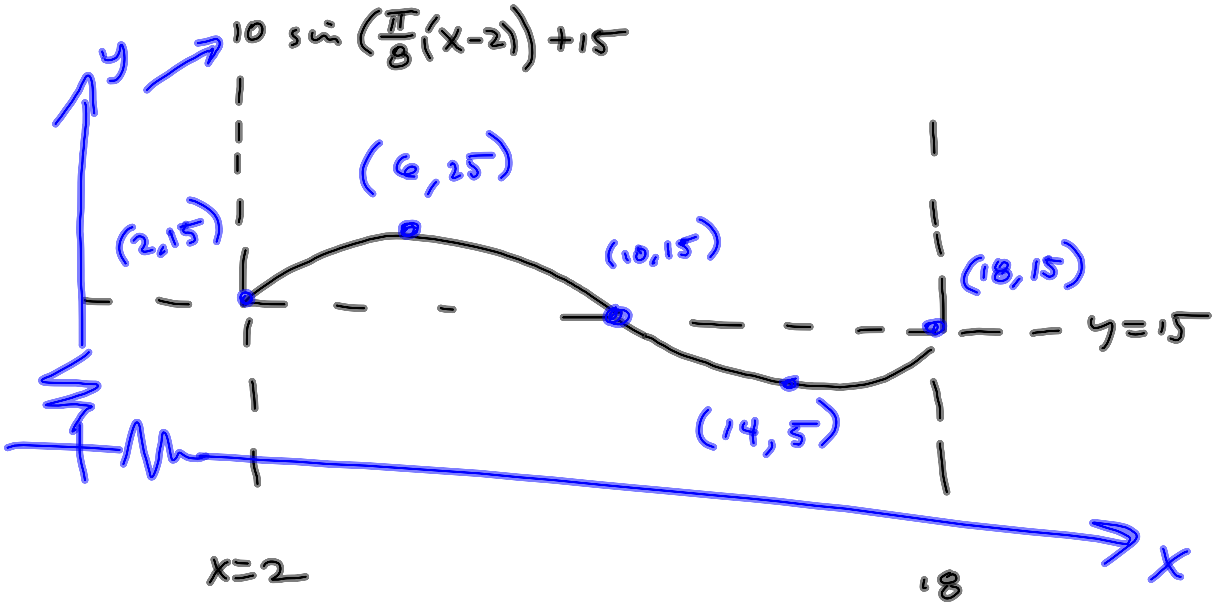
$\frac{\pi}{8}x = 2\pi$ when...

$x = \frac{2\pi}{\frac{\pi}{8}} = \frac{2\pi}{1} \cdot \frac{8}{\pi} = 16$

$\frac{\pi}{8}x - \frac{\pi}{4} = \frac{\pi}{8}(x-2)$

$\frac{\frac{\pi}{8}x}{\frac{\pi}{8}} = x \qquad \frac{\frac{\pi}{4}}{\frac{\pi}{8}} = \frac{\pi}{4} \cdot \frac{8}{\pi} = 2$

$10\sin\left(\frac{\pi}{8}(x-2)\right) + 15$



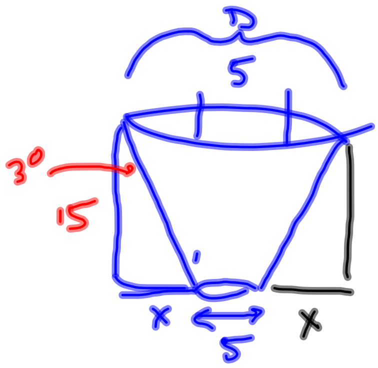
$\cos\frac{5}{7}$

$\sec =$

$\cos =$

$\sec\theta =$

Notation Concerns



$\tan 3^\circ = \frac{x}{15}$

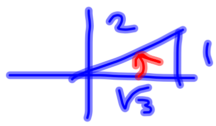
$x = 15\tan 3^\circ$

$\approx .7861166892$

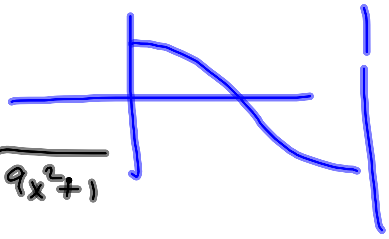
$D = 5 + 2x \approx 6.5722333\,78$ cm

$\csc\left(\cos^{-1}\left(\frac{\sqrt{3}}{2}\right)\right)$

$= \csc(30^\circ) = 2$

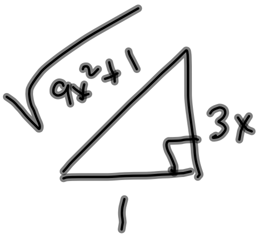


$\cos^{-1}\left(\frac{\sqrt{3}}{2}\right)$



$\sec(\arctan(3x)) = \sqrt{9x^2+1}$

0 .... π



$\sqrt{(3x)^2 + 1^2}$

$3x^2$

$\arctan(3x)$

§2.2

#24 $\dfrac{\sec\theta - 1}{1-\cos\theta}$

See solutions for this approach:

$$\frac{\sec\theta - 1}{1-\cos\theta}\cdot\frac{\sec\theta+1}{\sec\theta+1} = \frac{\sec^2\theta - 1}{\sim\sim}$$

$$= \frac{\tan^2\theta}{\cdots}$$

Pythagorean ID.

$$= \sec\theta$$

Other approach:

$$\frac{\sec\theta - 1}{1-\cos\theta}\cdot\frac{1+\cos\theta}{1+\cos\theta} =$$

$$= \frac{(\sec\theta - 1)(1+\cos\theta)}{1-\cos^2\theta}$$

$(a-b)(a+b)$

a^2-b^2

$$= \frac{\sec\theta + \sec\theta\cos\theta - 1 - \cos\theta}{\sin^2\theta}$$

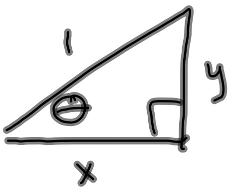
$$\frac{\frac{1}{\cos\theta} + \frac{1}{\cancel{\cos\theta}}\cdot\cancel{\cos\theta} - 1 - \cos\theta}{\sin^2\theta}$$

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

$$= \frac{\sin^2\theta}{\cos\theta}\cdot\frac{1}{\sin^2\theta} = \frac{1}{\cos\theta} = \sec\theta$$

$\sin^2\theta + \cos^2\theta = 1$

$\csc^2\theta - 1 = \cot^2\theta$



$$x^2+y^2 = 1^2$$

$$\left(\frac{x}{1}\right)^2 + \left(\frac{y}{1}\right)^2 = 1^2$$

$$\cos^2\theta + \sin^2\theta = 1$$

§2.2 Due Friday. After questions is OK.

Get stuck?

Leave rest of page blank after writing down ideas. Start fresh page.

1.

2. ? Ideas?

Blank

New Page

3.

41 $\sqrt{\frac{1+\sin\theta}{1-\sin\theta}\cdot\frac{1+\sin\theta}{1+\sin\theta}} = \frac{1+\sin\theta}{|\cos\theta|}$

$= \sqrt{\frac{(1+\sin\theta)^2}{1-\sin^2\theta}} = \sqrt{\frac{(1+\sin\theta)^2}{\cos^2\theta}} = \frac{1+\sin\theta}{|\cos\theta|}$

conjugate idea: $\sqrt{x^2} = |x|$

Recall Complex #s: $a+bi$

$\frac{a+bi}{c+di} = \underline{f+gi}$ $\qquad \frac{3+2i}{7-5i} = \left(\frac{3+2i}{7-5i}\right)\left(\frac{7+5i}{\underline{7+5i}}\right)$

conjugate of $7+5i$

$= \frac{21+15i+14i+10i^2}{7^2-(5i)^2}$ $\qquad (a-b)(a+b) = a^2-b^2$

$= \frac{21+29i-10}{49-25i^2} = \frac{11+29i}{49+25} = \frac{11+29i}{74}$

$= \frac{11}{74} + \frac{29}{74}i$