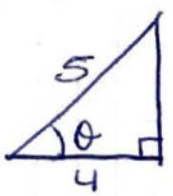
Sec 5.5 Double Angle Formula pg 418 # 1-11 odd, 21, 23



$3^2+4^2=c^2$
$9+16=c^2$
$5=c$
sohcantoa

#1) $\sin\theta = \boxed{\frac{3}{5}}$

#3) $\cos 2\theta = 1-2\sin^2\theta$
$= 1-2\left(\frac{3}{5}\right)^2$
$= 1-2\left(\frac{9}{25}\right)$
$= 1-\frac{18}{25}$
$\boxed{\frac{7}{25}}$

#5) $\tan 2\theta = \frac{2\tan\theta}{1-\tan^2\theta}$
$= \frac{2\left(\frac{3}{4}\right)}{1-\left(\frac{3}{4}\right)^2} = \frac{6/4}{7/16}$
$= \frac{6}{4_1}\cdot\frac{4\!\!1\!6}{7} = \boxed{\frac{24}{7}}$

#7) $\csc 2\theta$
$\frac{1}{\sin 2\theta} = \frac{1}{2\sin\theta\cos\theta}$
$= \frac{1}{2\left(\frac{3}{5}\right)\left(\frac{4}{5}\right)} = \frac{1}{\frac{24}{25}} = \boxed{\frac{25}{24}}$

$[0, 2\pi)$

#9) $\sin 2x - \sin x = 0$
$2\sin x\cos x - \sin x = 0$

S	A
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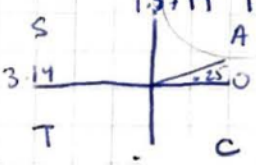
$\sin x(2\cos x - 1) = 0$
$\sin x = 0$ or $2\cos x - 1 = 0$
$\cos x = \frac{1}{2}$
$\boxed{x = 0, \pi \text{ OR } x = \frac{\pi}{3}, \frac{5\pi}{3}}$

#11) $8\sin x\cos x = 1$

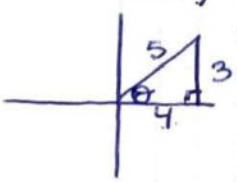


$4(2\sin x\cos x) = 1$
$4(\sin 2x) = 1$
$\sin 2x = \frac{1}{4}$

$2x = \pi - .2527$
$2x = 2.888$
$2x = \sin^{-1}(.25)$
$2x = .2527$
$\frac{2x}{2} = \frac{2.888 + 2\pi k}{2}$
$x = .126 + \pi k$
$x = 1.444 + \pi k$ $\Big\} k \in \mathbb{Z}$

$\boxed{x = .126, 1.444, 3.268, 4.586}$

#21) $\sin u = 3/5$, $0 < u < \pi/2$

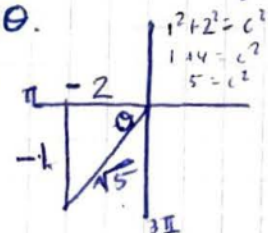


$\sin 2\theta = 2\sin\theta\cos\theta$
$= 2\left(\frac{3}{5}\right)\left(\frac{4}{5}\right)$
$= \boxed{\frac{24}{25}}$

$\cos 2\theta = \cos^2\theta - \sin^2\theta$
$= \left(\frac{4}{5}\right)^2 - \left(\frac{3}{5}\right)^2$
$\frac{16}{25} - \frac{9}{25}$
$= \boxed{\frac{7}{25}}$

$\tan 2\theta = \frac{2\tan\theta}{1-\tan^2\theta}$
$= \frac{2\left(\frac{3}{4}\right)}{1-\left(\frac{3}{4}\right)^2} = \frac{6/4}{1-9/16} = \frac{6}{4_1}\cdot\frac{4\!\!1\!6}{7}$
$\frac{7}{16}$
$= \boxed{\frac{24}{7}}$

#23) $\tan u = \frac{1}{2}$, $\pi < u < 3\pi/2$



$\sin 2\theta = 2\sin\theta\cos\theta$
$= 2\left(\frac{-1}{\sqrt{5}}\right)\left(\frac{-2}{\sqrt{5}}\right) = \boxed{\frac{4}{5}}$

$\cos^2\theta = 1-2\sin^2\theta$
$= 1-2\left(\frac{-1}{\sqrt{5}}\right)^2 \to \frac{1}{5}$
$= 1-\frac{2}{5} = \boxed{\frac{3}{5}}$

$\tan 2\theta = \frac{2\tan\theta}{1-\tan^2\theta}$
$= \frac{2\left(\frac{1}{2}\right)}{1-\left(\frac{1}{2}\right)^2} = \frac{1}{1-\frac{1}{4}}$
$= \frac{1}{3/4} = \boxed{\frac{4}{3}}$