8. If $\cos ^{2} x+2 \sin x-2=0$, find the exact value
of $\overline{\sin x}$

$$
\begin{gathered}
1-\sin ^{2} x+2 \sin x-2=0 \\
-1\left(-\sin ^{2} x+2 \sin x-1=0\right) \\
\sin ^{2} x-2 \sin x+1=0 \\
(\sin x-1)(\sin x-1)=0 \\
\sin x-1=0 \\
\sin x=1
\end{gathered}
$$

(5) $\cos A \tan ^{2} A+\cos A$.

$$
\begin{array}{l|l}
A \frac{\sin ^{2} A}{\cos A}+\cos A & \cos A\left(\sec ^{2} A-1\right)+\cos A \\
\frac{\sin ^{2} A}{\cos A}+\frac{\cos A}{1} \cdot \frac{\cos A}{\cos A} & \begin{array}{c}
\cos A\left(\frac{1}{\cos ^{2} A}-1\right)+\cos A \\
\frac{\sin ^{2} A+\cos ^{2} A}{\cos A}-\cos A \\
\cos A
\end{array} \\
\frac{1}{\cos A} A \\
\sec A & \frac{1}{\cos A} \\
\sec A
\end{array}
$$

2. If $\cos \theta=-\frac{4}{5}$ and $180^{\circ}<\theta<270^{\circ}$, find $\tan \theta$.

$$
\begin{aligned}
\sec \theta=-\frac{5}{4} \quad \tan ^{2} \theta+1 & =\left(-\frac{5}{4}\right)^{2} \\
\operatorname{tar}^{2} \theta+1 & =\frac{25}{16}-\times \frac{16}{16} \\
\tan ^{2} \theta & =\frac{9}{16} \\
\tan \theta & =\frac{3}{4}
\end{aligned}
$$

13. Use a sum or difference identity to simplify:

$$
\sin (\pi+A)=\frac{\sin \pi \cos A+\cos \pi \sin A}{(0) \cos A+(-1) \sin A}--\sin A-\infty
$$

12. 11. Find the exact value of $\cos (x+y)$ if $\sin x=\frac{8}{17} \cos y=\frac{7}{25}, y$ and $y$ have their terminal sides in the first quadrant.

$$
\begin{array}{rl|l}
\cos (x+y) & =\cos x \cos y-\sin x \sin y & \left(\frac{8}{17}\right)^{2}+\cos ^{2} x=1 \\
& =\left(\frac{15}{17}\right)\left(\frac{2}{25}\right)-\left(\frac{8}{17}\right)\left(\frac{24}{25}\right) & \cos ^{2} x=\frac{225}{289} \\
& =\frac{105}{425}-\frac{192}{425} & \begin{array}{l}
\cos x=\frac{15}{17} \\
\\
\end{array}=\frac{-87}{425}
\end{array} \begin{aligned}
& \sin ^{2} y+\left(\frac{7}{25}\right)^{2}=1 \\
& \sin ^{2} y=\frac{576}{625} \\
& \sin y=\frac{24}{25}
\end{aligned}
$$

$$
\text { 26. } \begin{aligned}
& \frac{\cot A}{\tan A}=\cot ^{2} A \\
& \frac{\cot A}{\frac{1}{\cot A}}= \\
& \cot A \cdot \frac{\cot A}{1}= \\
& \cot ^{2} A=\cot ^{2} A
\end{aligned}
$$

$$
\begin{gathered}
\text { 30. } \cos 2 x+2 \sin ^{2} x=1 \\
1-2 \sin ^{2} x+\frac{2 \sin ^{2} x}{1=1}
\end{gathered}
$$

$$
\begin{aligned}
& \text { 18. } \sin x=\frac{3}{5^{\prime}} 0<x<\frac{\pi}{2} \\
& \sin 2 x=2 \sin x \cos x \\
& \left(\frac{3}{5}\right)^{2}+\cos ^{2} x=1 \\
& =2\left(\frac{3}{5}\right)\left(\frac{4}{5}\right) \\
& \cos ^{2} x=\frac{16}{25} \\
& \cos x=\frac{4}{5} \\
& \sin 2 x=\frac{24}{25} \\
& \cos 2 x=\left(\frac{4}{5}\right)^{2}-\left(\frac{3}{5}\right) \\
& =\frac{16}{25}-\frac{9}{25} \\
& \cos 2 x=\frac{7}{25} \\
& \tan x=\frac{\frac{3}{5}}{\frac{4}{5}}=\frac{3}{8} \cdot \frac{7}{4} \\
& =\frac{3}{4} \\
& \tan 2 x=\frac{2 \tan x}{1-\tan ^{2} x}=\frac{2\left(\frac{3}{4}\right)}{1-\left(\frac{3}{2} x^{2}\right.}=\frac{\frac{6}{4}}{\frac{7}{16}} \\
& =\frac{6}{4_{1}} \cdot \frac{x^{4}}{7} \\
& \tan 2 x=\frac{24}{7}
\end{aligned}
$$

$$
\cos 2 x=\frac{3}{5}
$$

$$
\begin{aligned}
& \text { 17. } \tan x=\frac{1}{2}, \pi<x<\frac{3 \pi}{2} \\
& \begin{aligned}
\tan 2 x=\frac{2\left(\frac{1}{2}\right)}{1-\left(\frac{y}{2}\right)^{2}} & =\frac{1}{\frac{3}{4}}=\left(\frac{4}{3}\right)\left(\frac{1}{2}\right)^{2}+1
\end{aligned}=\sec ^{2} \dot{x} \\
& \begin{aligned}
& \sin 2 x=2 \sin x \cos x \\
&=2\left(-\frac{\sqrt{5}}{5}\right)\left(-\frac{2 \sqrt{5}}{5}\right) \quad-\frac{\sqrt{5}}{2}=\sec x \\
&
\end{aligned} \\
& \begin{array}{l}
\left.\sin 2 x=\frac{20}{25}=\frac{4}{5}\right) \\
\cos 2 x=2\left(-\frac{2-\sqrt{5}}{5}\right)^{2}-1
\end{array} \\
& =2\left(\frac{2 p}{25}\right)-1 \\
& =\frac{8}{5}-1 \\
& \left.\sin ^{2} x+\left(\frac{-2 \sqrt{5}}{5}\right)^{2}=\right)_{-\frac{4}{5}}^{5} \\
& \sin ^{2} x=\frac{1}{5} \\
& \sin x=-\frac{1}{\sqrt{5}}=\frac{-\sqrt{5}}{5}
\end{aligned}
$$

(23)

$$
\begin{gathered}
\sec ^{2} x+\tan x-1=0 \\
\begin{array}{c}
\tan ^{2} x+x+\tan x-1=0 \\
\tan ^{2} x+\tan x=0 \\
\tan x(\tan x+1)=0 \\
\tan x=0 \quad \tan x+1=0 \\
x=0^{\circ}, 180^{\circ} \quad \begin{array}{r}
\tan x=-1 \\
0, \pi \\
x=135^{\circ}, 3150 \\
\frac{3 \pi}{4}, \frac{7 \pi}{4}
\end{array} \\
\left.\begin{array}{c}
x=\pi k \\
x=\frac{3 \pi}{4}+\pi k
\end{array}\right\} k=, h t .
\end{array}
\end{gathered}
$$

(24)

$$
\begin{aligned}
& 2 x-5 y=-4 \\
& 2 x-5 y+4=0 \\
& d=\left|\frac{2(2)-5(3)+4}{\sqrt{2^{2}+(-5)^{2}}}\right|=\left|\frac{-7}{\sqrt{29}}\right|=\frac{7}{\sqrt{29}}=\frac{7 \sqrt{29}}{29}
\end{aligned}
$$

