1) 

$$
\begin{aligned}
\cos (2 x+15)= & 0.3 \\
2 x+15= & \cos ^{-1}(0.3) \\
= & 72.5,287.5 \\
& (360-72.5) \\
x= & 28.8^{\circ}, 136.2^{\circ}
\end{aligned}
$$

2) 

$$
\begin{aligned}
\sin (3 \theta-15)= & 0.7 \\
3 \theta-15= & \sin ^{-1}(0.7) \\
= & 44.4,135.6,404.4 \\
& (180-\text { Ans }) \\
\theta= & \frac{19.81^{\circ}, \frac{50.19^{\circ}}{} 139.6}{}, \underline{139.81^{0}} 170.19^{\circ}
\end{aligned}
$$

3) 

$$
\begin{aligned}
& \tan (\theta+30)=-2.5 \\
& \theta+30=\tan ^{-1}(-2.5) \\
&=-68.2,111.8 \\
&(\text { Ans }+180) \\
& \theta=-98.2^{\circ}, 81.8^{\circ}
\end{aligned}
$$

4) 

$$
\begin{aligned}
5 \cos (x-40) & =2 \\
\cos (x-40) & =0.4 \\
x-40 & =\cos ^{-1}(0.4) \\
& =66.4,293.6 \\
x & =106.42^{\circ}, 333.58^{\circ}
\end{aligned}
$$

$$
5
$$

$$
\begin{aligned}
& \tan ^{2} x=3 \\
& \tan x= \pm \sqrt{3}
\end{aligned}
$$

$$
\begin{array}{rlr}
\tan x=\sqrt{3} & \tan x=-\sqrt{3} \\
x=\tan ^{-1}(\sqrt{3}) & x=\tan (-\sqrt{3}) \\
x=60,240 & x=-60,120,300 \\
x & =60^{\circ}, 120^{\circ}, 240^{\circ}, 300^{\circ}
\end{array}
$$

ba)

$$
\begin{aligned}
2 \sin ^{2} x & =7 \cos x+5 \\
2\left(1-\cos ^{2} x\right) & =7 \cos x+5 \\
2-2 \cos ^{2} x & =7 \cos x+5 \\
0 & =2 \cos ^{2} x+7 \cos x+3
\end{aligned}
$$

b) $(2 \cos x+1)(\cos x+3)=0$
$\cos x=-1 / 2 \quad \cos x=-3$

$$
\begin{aligned}
x & =\cos ^{-1}\left(-\frac{1}{2}\right) \\
& =120^{\circ}, 240^{\circ} \times \text { (No solutions) }
\end{aligned}
$$

$$
x=120^{\circ}, 240^{\circ}
$$

7a)

$$
\begin{aligned}
6 \cos ^{2} x & =4-\sin x \\
6\left(1-\sin ^{2} x\right) & =4-\sin x \\
6-6 \sin ^{2} x & =4-\sin x \\
0 & =6 \sin ^{2} x-\sin x-2
\end{aligned}
$$

b)

$$
\begin{array}{ll}
(3 \sin x-2)(2 \sin x+18)=0 \\
\sin x=\frac{2}{3} & \sin x=-\frac{1}{2} \\
x=\sin ^{-1}(2 / 3) & x=\sin ^{-1}(-1 / 2) \\
x=41.8^{\circ}, 138.2^{\circ} & x=-30,210^{\circ}, 330^{\circ} \\
x & x=41.8^{\circ}, 138.2^{\circ}, 210^{\circ}, 330^{\circ}
\end{array}
$$

$8)$

$$
\begin{gathered}
2 \cos ^{2} x-3 \sin ^{2} x=14 \cos x \\
2 \cos ^{2} x-3\left(1-\cos ^{2} x\right)=14 \cos x \\
2 \cos ^{2} x-3+3 \cos ^{2} x=14 \cos x \\
5 \cos ^{2} x-14 \cos x-3=0 \\
(5 \cos x+1)(\cos x-3)=0 \\
\cos x=-\frac{1}{5} \cos x=3 \\
x=\cos ^{-1}\left(-\frac{1}{5}\right) x \\
=101.5^{\circ}, 258.5^{\circ}
\end{gathered}
$$

$$
\begin{aligned}
10 y & =\sin (x-30) \\
\sin (x-30) & =0.3 \\
x-30 & =\sin ^{-1}(0.3)
\end{aligned}
$$

$$
\begin{aligned}
& 3 \tan x=4 \sin x \\
& 3 \frac{\sin x}{\cos x}=4 \sin x \\
& 3 \sin x=4 \sin x \cos x
\end{aligned}
$$

$$
\begin{aligned}
& 0=4 \sin x \cos x-3 \sin x \\
& 0=\sin x(4 \cos x-3)
\end{aligned}
$$

$$
\sin x=0 \quad \cos x=3 / 4
$$

$$
x=\sin ^{-1}(0) \quad x=\cos ^{-1}(3 / 4)
$$

$$
x=0^{\circ} 180^{\circ} \quad x=41.4^{\circ}, 318.6^{\circ}
$$

$$
x=0 ; 41.4^{\circ}, 180^{\circ}, 318.6^{\circ}
$$

11a)

$$
\begin{aligned}
3 \sin 2 x \tan 2 x & =\cos 2 x+2 \\
3 \sin 2 x \cdot \frac{\sin 2 x}{\cos 2 x} & =\cos 2 x+2 \\
\frac{3 \sin ^{2} 2 x}{\cos 2 x} & =\cos 2 x+2 \\
3 \sin ^{2} 2 x & =\cos ^{2} 2 x+2 \cos 2 x \\
3\left(1-\cos ^{2} 2 x\right) & =\cos ^{2} 2 x+2 \cos 2 x \\
3-3 \cos ^{2} 2 x & =\cos ^{2} 2 x+2 \cos 2 x \\
0 & =4 \cos ^{2} 2 x+2 \cos 2 x-3
\end{aligned}
$$

b)

$$
\begin{gathered}
a=4 \quad b=2 \quad c=-3 \\
\cos 2 x=\frac{-(2) \pm \sqrt{(2)^{2}-4(4)(-3)}}{2(4)}
\end{gathered}
$$

$\cos 2 x=0.651 \quad \cos 2 x=-1.15 \ldots$

$$
\begin{aligned}
& 2 x=49.4^{\circ}, 310.6^{\circ} \quad x \\
& x=24.68^{\circ}, 155.32^{\circ}
\end{aligned}
$$

