Suppose the equations for the planes $P_1$ and $P_2$ are $2x - 2y + 3z = 3$ and $6x + y - 2z = 5$, respectively, where $P_1$ and $P_2$ are not parallel.

a) By definition, the angle between two planes is the angle between their normal vectors. The normal vectors for $P_1$ and $P_2$ are $\langle 2, -2, 3 \rangle$ and $\langle 6, 1, -2 \rangle$, respectively. The dot product and the angle $\Theta$ between nonzero vectors are related by

$$
\cos(\Theta) = \frac{\langle 2, -2, 3 \rangle \cdot \langle 6, 1, -2 \rangle}{\| \langle 2, -2, 3 \rangle \| \| \langle 6, 1, -2 \rangle \|} = \frac{2(6) + 1(-2) + 3(-2)}{\sqrt{(17)} \cdot \sqrt{(41)}}
$$

$$
\Rightarrow \Theta = \arccos\left(\frac{4}{\sqrt{697}}\right).
$$

b) Just by looking at the equations for each plane, it appears that the point $(1,1,1)$ is on both $P_1$ and $P_2$. To check...

$$
P_1: 2(1) - 2(1) + 3(1) = 2 - 2 + 3 = 3
$$
$$
P_2: 6(1) + (1) - 2(1) = 6 + 1 - 2 = 5
$$

c) We already have a point, $(1,1,1)$, so we only need a direction vector to parameterize the line of intersection of $P_1$ and $P_2$. The cross product of their normal vectors will give us this direction vector.

$$
\langle 2, -2, 3 \rangle \times \langle 6, 1, -2 \rangle = \det \begin{vmatrix} i & j & k \\ 2 & -2 & 3 \\ 6 & 1 & -2 \end{vmatrix} = \det \begin{vmatrix} 2 & -2 & 3 \\ 6 & 1 & -2 \end{vmatrix} = (6((-2)(-2) - (3)(1)))i - (2((-2)(-2) - (3)(1)))j + (2(6) - (1)(-2))k
$$

$$
= 1 \cdot i + 22 \cdot k + 14 \cdot k = \langle 1, 22, 14 \rangle
$$

Now we have both a point and a direction, so we can parameterize the line of intersection of $P_1$ and $P_2$ by...

$$
c(t) = ( t + 1, 22t + 1, 14t + 1 )
$$