1. Find the distance from the plane $y + x + z = 0$ to the plane $-x - y - z = 3$.

**Solution:** In order to find this distance, we need a point on the first plane, a point on the second plane, and a normal for the second plane. We can use $(0,0,0)$ as the point on the plane $x + y + z = 0$, call it $P$, and we can use $(0,0,-3)$ as the point on the $-x - y - z = 3$, call it $Q$. Lastly, we can use $<-1,-1,-1>$ as the normal, $n$, for the second plane. Now recall that the distance from a point to a plane is:

$$d = |\vec{PQ} \cdot n| / |n|$$

Inserting specific values in the equation above, we find that $\vec{PQ} = < 0,0,-3 >, n = <-1,-1,-1>$, $\vec{PQ} \cdot n = 3$. and $|n| = \sqrt{3}$.

Therefore $d = 3/\sqrt{3} = \sqrt{3}$. 