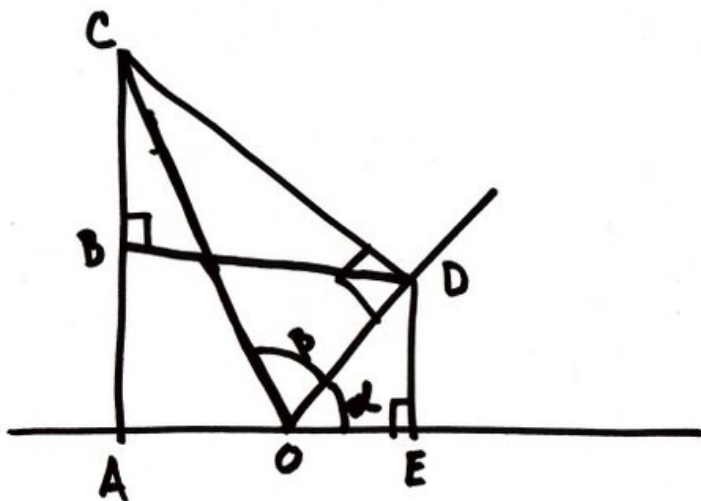# Additional Problems Assignment 10

1. In class we found a formula for the trig function for $\alpha + \beta$ as long as $\alpha + \beta$ is in the first quadrant. Now we look at the case where $\alpha + \beta$ is in the second quadrant. Consider the following picture:

(a) Argue that $\angle BCD$ is α.

(b) From the diagram what ratio of lengths represents $\sin(\alpha + \beta)$ and $\cos(\alpha + \beta)$. Remember that this is taking place in the second quadrant.

(c) Using a similar approach to what we did in class show $\sin(\alpha+\beta) = \sin(\alpha)\cos(\beta)+\sin(\beta)\cos(\alpha)$ in this case too. Have fun with this!

(d) Using a similar approach to what we did in class show $\cos(\alpha + \beta) = \cos(\alpha)\cos(\beta) - \sin(\alpha)\sin(\beta)$ in this case too.