Compute $\sin\left(\frac{x}{2}\right)$, $\cos\left(\frac{x}{2}\right)$, and $\tan\left(\frac{x}{2}\right)$ from the given information. In your response, identify the quadrant of the angle x, the quadrant of the angle $\frac{x}{2}$, and draw the relevant right triangle, as was done in class. Recall the half-angle identities

$$\sin\left(\frac{x}{2}\right) = \pm\sqrt{\frac{1 - \cos(x)}{2}}$$

and

$$\cos\left(\frac{x}{2}\right) = \pm\sqrt{\frac{1 + \cos(x)}{2}}.$$

1. $\tan(x) = 3$ and $\sin(x) < 0$

2. $\cos(x) = -\dfrac{1}{4}$ and $\tan(x) > 0$