In this talk, we consider ground states of two-dimensional Bose-Einstein condensates (BECs) in the rotating trap $V(x)$. If the interaction among BECs is repulsive and the rotating trap $V(x)$ is radially symmetric, then the analytical properties of ground states have been well investigated since around 2000. As for the case where the interaction among BECs is attractive, we discuss all kinds of analytical properties of ground states, including the existence, uniqueness, the quantum vortices and etc., no matter whether the rotating trap $V(x)$ is radially symmetric or not.