A puck slides with speed v on frictionless ice. The surface is "level", in the sense that it is orthogonal to $\mathbf{g}_{\text{eff}}$ at all points. Here $\mathbf{g}_{\text{eff}}$ is the vector sum of the acceleration due to the Earth's gravitational attraction and the centrifugal acceleration due to the Earth's rotation about its axis. Show that the puck moves in a circle, as seen in the Earth's rotating frame. What is the radius of the circle? What is the frequency of the motion? Assume the radius of the circle is small compared to the radius of the Earth.