1. (*Note: This problem can also serve as a post-test for* Accelerating reference frames: Rotating frames.)  
  
The diagrams below show a coordinate system fixed to the surface of the Earth at a northern latitude *.*



A particle at this latitude ** moves with *horizontal* velocity *.*

Show that the *horizontal component* of the Coriolis “force” has a magnitude that is *independent* of the value *.* Clearly show all work.