

**Special Problem 2-5.18**

Contour  $C$  is a circle with radius 2.0 units.

This circle is centered at the origin, and lies entirely on the  $x$ - $z$  plane.

Vector field  $\mathbf{A}(\vec{r}) = r^3 \cos \theta \hat{a}_\phi + r^2 \cos \phi \hat{a}_z$

Evaluate the contour integral  $\int_C \mathbf{A}(\vec{r}) \cdot d\vec{\ell}$

