

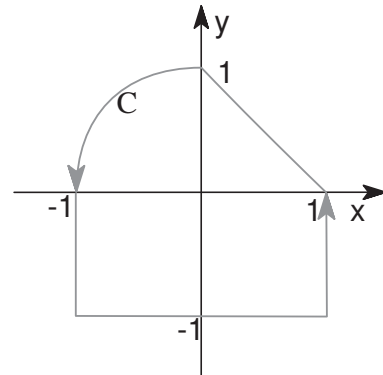
1. Coordinate Systems

- At what times at winter solstice, summer solstice, spring equinox, and fall equinox are geocentric equatorial inertial coordinates (GEI) and geographic coordinates (GEO) approximately equal?
- For which dates are geocentric solar ecliptic (GSE) and geocentric solar magnetospheric coordinates approximately the same? For which dates is the difference largest?

2. Conservative and non-conservative forces

(a) A force field $\mathbf{K}(x, y)$ is determined by $\mathbf{K} = [xy + 1, y/(x^2 + y^2), 1]$. Calculate the closed line integral $\oint_C \mathbf{K} \cdot d\mathbf{s}$ along the contour C indicated in the figure on the right.

(b) Can \mathbf{K} be derived from a potential and what does this imply? Summarize conditions or tests to demonstrate that a force (system) is conservative.



Please turn in the solutions to the homework on Monday, 02/03/14