

Problems: Work Along a Space Curve

1. Find the work done by the force $\mathbf{F} = -y\mathbf{i} + x\mathbf{j} + z\mathbf{k}$ in moving a particle from $(0, 0, 0)$ to $(2, 4, 8)$
 - (a) along a line segment
 - (b) along the path $\mathbf{r} = t\mathbf{i} + t^2\mathbf{j} + t^3\mathbf{k}$.

2. Let $\mathbf{F} = \nabla f$, where $f = \frac{1}{(x + y + z)^2 + 1}$. Find the work done by \mathbf{F} in moving a particle from the origin to infinity along a ray.

MIT OpenCourseWare
<http://ocw.mit.edu>

18.02SC Multivariable Calculus
Fall 2010

For information about citing these materials or our Terms of Use, visit: <http://ocw.mit.edu/terms>.