

Line Integrals

Calculate the work done for

1. The force $\mathbf{F} = x^2\mathbf{i} + yz\mathbf{j}$ from the point (1,2,3) to the point (4,5,6) along the straight lines which also go through the intermediary points (1,2,6) and (1,5,6).
2. The force $\mathbf{F} = x^2\mathbf{i} + yz\mathbf{j}$ from the point (1,2,3) to the point (4,5,6) along the straight line between them.
3. The force $\mathbf{F} = 3x^2\mathbf{i}$ along one half of the cardioid $r = 6(1+\cos\varphi)$ for $0 \leq \varphi \leq \pi$.

