Worksheet 5 - Line Integrals

1. Find $\int_C xy^4\,ds$, where C is the right half of the circle $x^2+y^2=16$.
2. Find $\int_C (2+x^2y)\,ds$, where C is the upper half of the unit circle $x^2+y^2=1$..
3. Find $\int_C \frac{x^2}{y^{4/3}}\,ds$, where C is the curve: $\vec{r}(t)=t^2\vec{i}+t^3\vec{j}$, $-3\le t\le 1$.
4. Find the line integral of $f(x,y,z)=xyz$ along the curve C given by the helix:

$$\vec{r}(t)=\cos(t)\vec{i}+\sin(t)\vec{j}+3t\vec{k},\ 0\le t\le 4\pi.$$

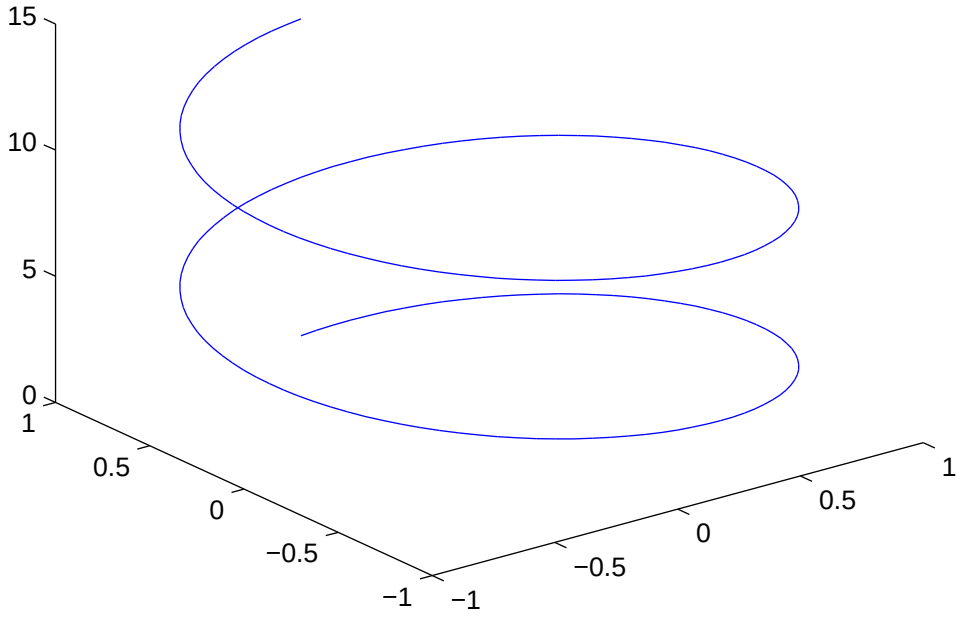

Figure 1: Helix