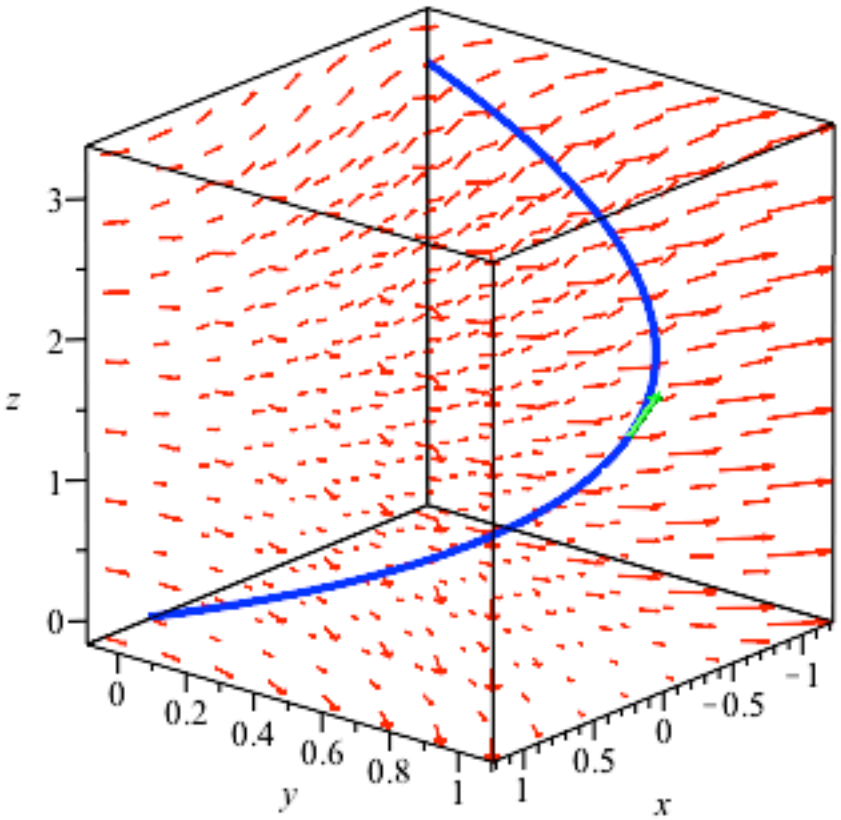
```
> with(Student[VectorCalculus]):
> F := (x, y, z) → VectorField(⟨2·x·y·exp(x^2), exp(x^2), z⟩):
> f := (x, y, z) → ScalarPotential(F(x, y, z)):
> f(x, y, z)
```

$$y\,e^{x^2} + \frac{1}{2}\,z^2 \tag{1}$$

```
> LineInt(F(x, y, z), Path(⟨cos(t), sin(t), t⟩, t = 0 .. Pi), output = plot, pathoptions = [color
      = blue], vectoroptions = [color = green], fieldoptions = [color = red, arrows = SLIM], axes
      = boxed, orientation = [40, 70]);
  LineInt(F(x, y, z), Path(⟨cos(t), sin(t), t⟩, t = 0 .. Pi), output = integral);
  LineInt(F(x, y, z), Path(⟨cos(t), sin(t), t⟩, t = 0 .. Pi));
```



The path of integration, vector(s) tangent to the path, and vector-field arrows

$$\int_0^{\pi} \left(-2\cos(t)\sin(t)^2\, e^{\cos(t)^2} + e^{\cos(t)^2}\cos(t) + t \right) dt$$

$$\frac{1}{2}\,\pi^2 \tag{2}$$

```
>
```