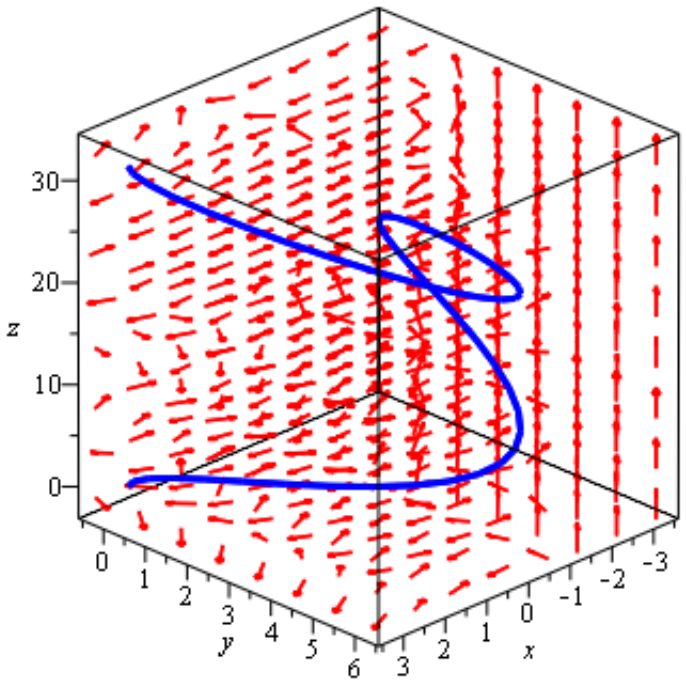
```
> with(Student[VectorCalculus]) :
> F := (x, y, z) → VectorField(⟨y·exp(x·y)·cos(x·z) − z·exp(x·y)·sin(x·z), x·exp(x·y)·cos(x
    ·z), 1 − x·exp(x·y)·sin(x·z)⟩) :
> LineInt(F(x, y, z), Path(⟨3·cos(t), 6·(sin(t))^2, 5·t⟩, t = 0..2·Pi), output = plot, pathoptions
    = [color = blue], vectoroptions = [color = green], fieldoptions = [color = red, fieldstrength
    = fixed(0.6), arrows = SLIM], axes = boxed, orientation = [45, 65]);
  LineInt(F(x, y, z), Path(⟨3·cos(t), 6·(sin(t))^2, 5·t⟩, t = 0..2·Pi), output = integral);
  LineInt(F(x, y, z), Path(⟨3·cos(t), 6·(sin(t))^2, 5·t⟩, t = 0..2·Pi));
```



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

$$\int_0^{2\pi} \left(-3 \left(6 \sin(t)^2 \, e^{18 \sin(t)^2 \cos(t)} \cos(15 \cos(t)\, t) - 5\, t \, e^{18 \sin(t)^2 \cos(t)} \sin(15 \cos(t)\, t) \right) \sin(t) + 36 \cos(t)^2 \, e^{18 \sin(t)^2 \cos(t)} \cos(15 \cos(t)\, t) \sin(t) + 5 - 15 \cos(t)\, e^{18 \sin(t)^2 \cos(t)} \sin(15 \cos(t)\, t) \right) dt$$

$$10\,\pi \qquad \textbf{(1)}$$

```
> simplify(ScalarPotential(F(x, y, z)));
```

$$e^{yx} \cos(x\, z) + z \qquad \textbf{(2)}$$

```
> f := (x, y, z) → (2) :
```

```
> f(3, 0, 10·Pi) − f(3, 0, 0);
```

$$10\,\pi \tag{3}$$

```
> LineInt(F(x, y, z), Path(⟨3, 0, 10·Pi·t⟩, t = 0..1), output = integral);
  LineInt(F(x, y, z), Path(⟨3, 0, 10·Pi·t⟩, t = 0..1));
```

$$\int_0^1 10\,\left(1 - 3\sin\left(30\,\pi\,t\right)\right)\,\pi\,\mathrm{d}t$$

$$10\,\pi \tag{4}$$

```
>
```