```
> with(VectorCalculus) : SetCoordinates(cartesian[x, y, z]) :
> f := VectorField([z², x·z, y²]) :
> vector_potential := VectorPotential(f)
```

$$vector\_potential := \left(\frac{xz^2}{2} - \frac{y^3}{3}\right)\bar{e}_x + \left(-\frac{z^3}{3}\right)\bar{e}_y + (0)\bar{e}_z \tag{1}$$

```
> # Check if this is actually divergent
> A_x := vector_potential[1];
  A_y := vector_potential[2];
  A_z := vector_potential[3];
  grad_A_x := diff(A_x, x$1);
  grad_A_y := diff(A_y, y$1);
  grad_A_z := 0;
```

$$A\_x := \frac{xz^2}{2} - \frac{y^3}{3}$$

$$A\_y := -\frac{z^3}{3}$$

$$A\_z := 0$$

$$grad\_A\_x := \frac{z^2}{2}$$

$$grad\_A\_y := 0$$

$$grad\_A\_z := 0 \tag{2}$$

```
> phi_lapl := grad_A_x + grad_A_y + grad_A_z
```

$$phi\_lapl := \frac{z^2}{2} \tag{3}$$

```
> int(int(phi_lapl, z), z)
```

$$\frac{z^4}{24} \tag{4}$$

```
>
```