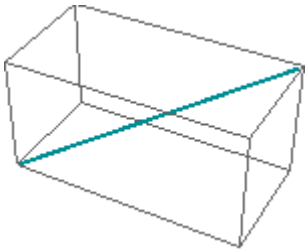
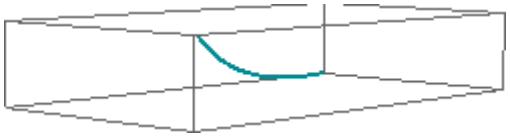
9.

Exercício 9.1

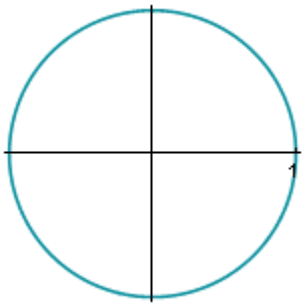
a)



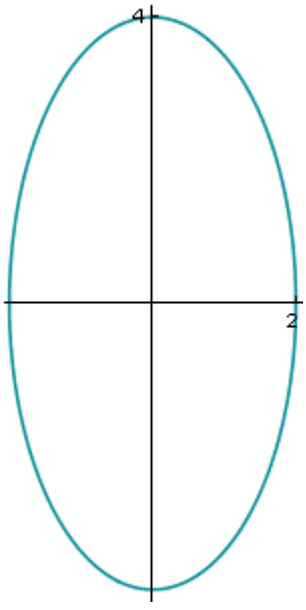
b)



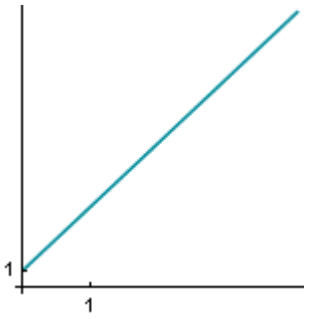
c)



d)



e)



Exercício 9.3

a)

$$\{6, 6\,t, 3\,t^2\}$$

b)

$$\left\{3\,\text{Cos}[3\,t], -3\,\text{Sin}[3\,t], \frac{3\,t^2}{\sqrt{t^3}}\right\}$$

c)

$$\{-2\,\text{Cos}[t]\,\text{Sin}[t], 3 - 3\,t^2, 1\}$$

d)

$$\{4\,e^t, 24\,t^3, -\text{Sin}[t]\}$$

Exercício 9.4

a)

$$\{x,y,z\} = \{\text{Sin}[3], \text{Cos}[3], 2\} + \lambda\{3\,\text{Cos}[3], -3\,\text{Sin}[3], 5\},\ \lambda \in \mathbb{R}$$

b)

$$\{x,y,z\} = \{1, 0, 0\} + \lambda\{0, 3, 1\},\ \lambda \in \mathbb{R}$$

Exercício 9.5

a)

$$\{8, 8, 0\}$$

a)

$$\{2\,e, 0, \text{Cos}[1] - \text{Sin}[1]\}$$

Exercício 9.7

a)

$$2\sqrt{2}\,\pi^2$$

b)

$$52\sqrt{14}$$

Exercício 9.8

$$-\sqrt{2} + \sqrt{5} - \text{ArcCsch}[2] + \text{ArcSinh}[1]$$

Exercício 9.9

$$\frac{1}{4}\left(2\sqrt{5} + \text{ArcSinh}[2]\right)$$

Exercício 9.10

$$12\,\pi$$

Exercício 9.11

$$0$$

Exercício 9.12

$$2\,\pi^2$$

Exercício 9.13

a)

$$\{e^y \cos[\pi z],\ e^y x \cos[\pi z],\ -e^y \pi x \sin[\pi z]\}$$

b)

$$0$$

Exercício 9.14

b)

$$e^6$$

Exercício 9.15

a)

$$2\,\pi$$

b)

$$6\,\pi$$

Exercício 9.16

a)

$$-\frac{1}{6}$$

b)

$$1$$

c)

$$\frac{3\pi}{2}$$

b)

$$5$$

Exercício 9.17

a)

$$ab\pi$$

b)

$$6\pi$$