

$$\text{evalf}(\text{sqrt}(5))$$

$$2.236067977 \quad (1)$$

$$f := x \mapsto \frac{4}{3} \cdot \text{sqrt}(9 - x^2)$$

$$f := x \mapsto \frac{4 \cdot \sqrt{9 - x^2}}{3} \quad (2)$$

$$f(\text{sqrt}(5))$$

$$\frac{8}{3} \quad (3)$$

$$fp := D(f)$$

$$fp := x \mapsto -\frac{4 \cdot x}{3 \cdot \sqrt{9 - x^2}} \quad (4)$$

$$fp(\text{sqrt}(5))$$

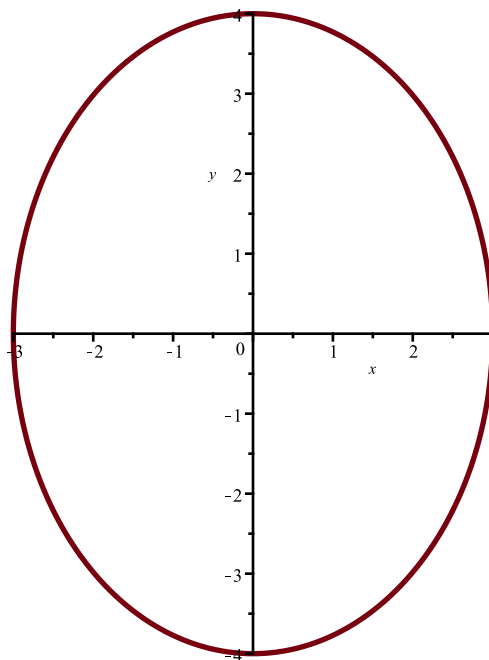
$$-\frac{\sqrt{5} \sqrt{4}}{3} \quad (5)$$

$$\text{simplify}(\%)$$

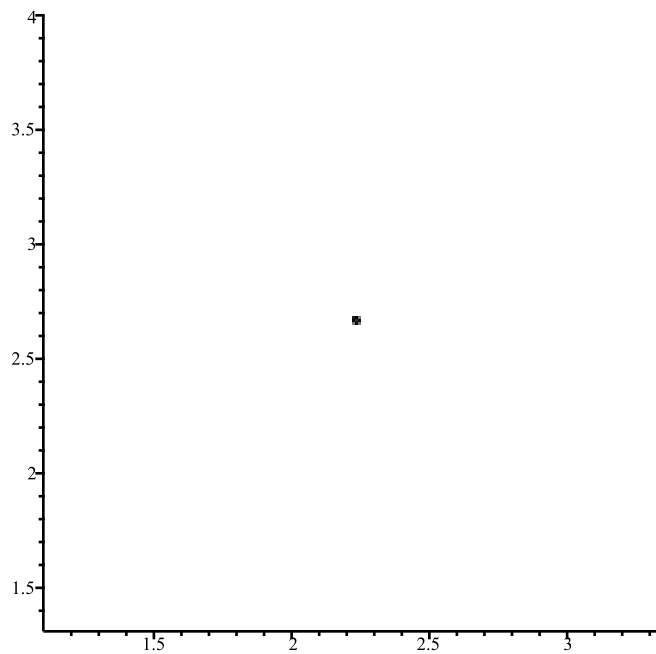
$$-\frac{2\sqrt{5}}{3} \quad (6)$$

with(plots) :

$$myellipse := \text{implicitplot}\left(\frac{x^2}{9} + \frac{y^2}{16} = 1, x = -4 \dots 4, y = -5 \dots 5, \text{thickness} = 2, \text{scaling} = \text{constrained}\right)$$



$$mypoint := \text{pointplot}([\text{sqrt}(5), f(\text{sqrt}(5))], \text{symbol} = \text{solidcircle}, \text{symbolsize} = 10)$$

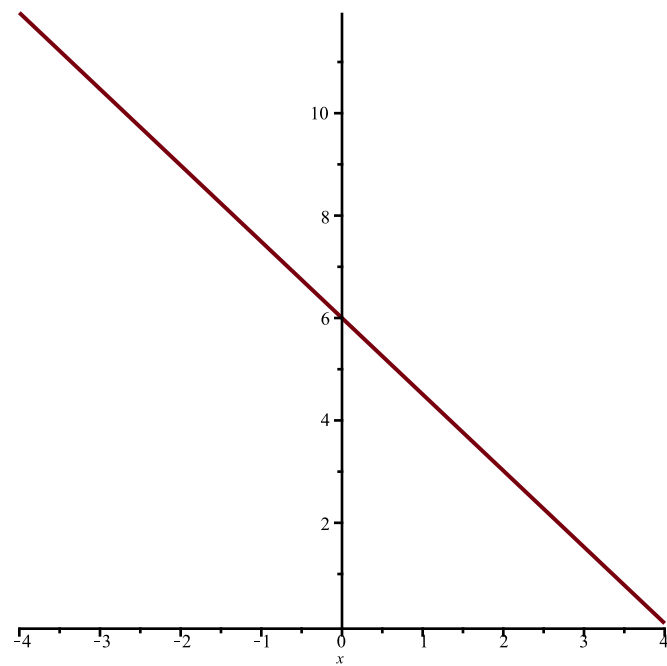


$$\text{mytanline} := x \mapsto -\frac{2 \cdot \sqrt{5}}{3} \cdot (x - \sqrt{5}) + \frac{8}{3}$$

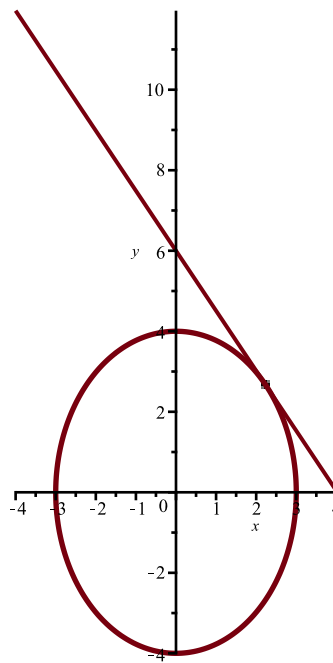
$$\text{mytanline} := x \mapsto -\frac{2 \cdot \sqrt{5} \cdot (x - \sqrt{5})}{3} + \frac{8}{3}$$

(7)

$$\text{tanplot} := \text{plot}(\text{mytanline}(x), x = -4 \dots 4)$$



$$\text{display}([\text{mypoint}, \text{myellipse}, \text{tanplot}])$$



$$\begin{aligned} \text{mytan} &:= x \mapsto fp(\sqrt{5}) \cdot (x - \sqrt{5}) + f(\sqrt{5}) \\ \text{mytan} &:= x \mapsto fp(\sqrt{5}) \cdot (x - \sqrt{5}) + f(\sqrt{5}) \end{aligned} \quad (8)$$

$$\begin{aligned} \text{mytan}(x) \\ &= -\frac{\sqrt{5} \sqrt{4} (x - \sqrt{5})}{3} + \frac{8}{3} \end{aligned} \quad (9)$$

$$\begin{aligned} \text{simplify}(\%) \\ &= 6 - \frac{2\sqrt{5} x}{3} \end{aligned} \quad (10)$$

$$\begin{aligned} \text{mytanline}(x) \\ &= -\frac{2\sqrt{5} (x - \sqrt{5})}{3} + \frac{8}{3} \end{aligned} \quad (11)$$

$$\begin{aligned} \text{simplify}(\%) \\ &= 6 - \frac{2\sqrt{5} x}{3} \end{aligned} \quad (12)$$

2.6 #30 from textbook:

$$\begin{aligned} \text{myeqn} &:= x^{\frac{2}{3}} + y^{\frac{2}{3}} = 1 \\ \text{myeqn} &:= x^{2/3} + y^{2/3} = 1 \end{aligned} \quad (1.1)$$

$$\text{myplot} := \text{implicitplot}(\text{myeqn}, x = -10..10, y = -10..10, \text{scaling} = \text{constrained})$$

