

Here's a visualization of Section 3.2 #16 from the text.

*with(plots) :*

$$f := x \rightarrow x^3 - 2 \cdot x$$

$$f := x \mapsto x^3 - 2x \quad (1)$$

$$fp := D(f)$$

$$fp := x \mapsto 3x^2 - 2 \quad (2)$$

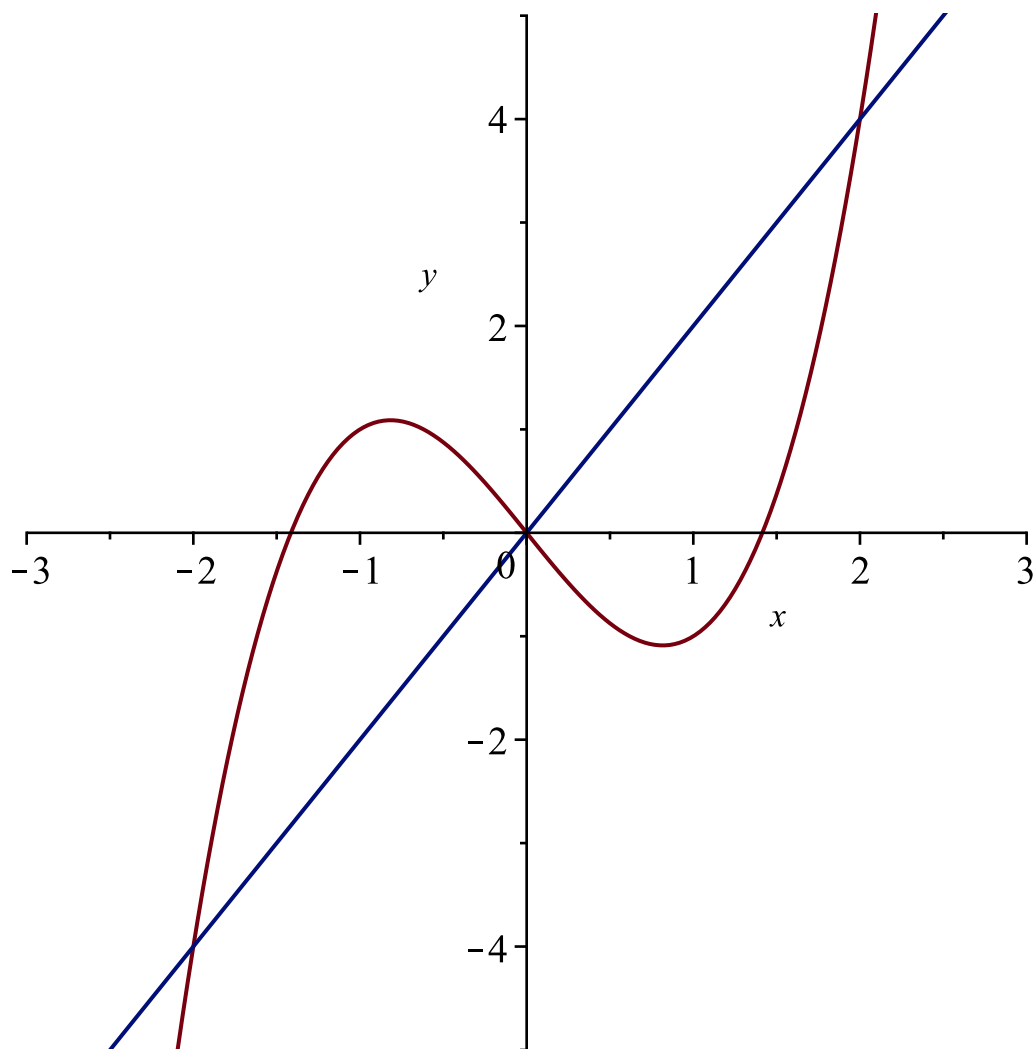
$$msec := \frac{(f(2) - f(-2))}{2 - (-2)}$$

$$msec := 2 \quad (3)$$

$$secline := x \rightarrow msec \cdot (x - 2) + f(2)$$

$$secline := x \mapsto msec(x - 2) + f(2) \quad (4)$$

$$plot([f(x), secline(x)], x = -3..3, y = -5..5)$$



$$line1 := x \rightarrow 2 \cdot \left( x - \frac{2}{\text{sqrt}(3)} \right) + f\left( \frac{2}{\text{sqrt}(3)} \right)$$

$$line1 := x \mapsto 2x - \frac{4}{\sqrt{3}} + f\left( \frac{2}{\sqrt{3}} \right) \quad (5)$$

$$line2 := x \mapsto 2 \cdot \left( x + \frac{2}{\sqrt{3}} \right) + f\left( \frac{-2}{\sqrt{3}} \right)$$

$$line2 := x \mapsto 2x + \frac{4}{\sqrt{3}} + f\left( -\frac{2}{\sqrt{3}} \right)$$

(6)

`plot([f(x), secline(x), line1(x), line2(x)], x=-3..3, y=-5..5)`

