

with(plots) :

$$f := x \mapsto x^3 - 3x + 2$$

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

$$fp := D(f)$$

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

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

$$msec := 1 \quad (3)$$

$$secantline := x \mapsto 1 \cdot (x + 2) + f(-2)$$

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

$$solve(fp(x) = 1)$$

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

$$tanline1 := x \mapsto fp\left(-\frac{2 \cdot \text{sqrt}(3)}{3}\right) \cdot \left(x + \frac{2 \cdot \text{sqrt}(3)}{3}\right) + f\left(-\frac{2 \cdot \text{sqrt}(3)}{3}\right)$$

$$tanline1 := x \mapsto fp\left(-\frac{2\sqrt{3}}{3}\right) \left(x + \frac{2\sqrt{3}}{3}\right) + f\left(-\frac{2\sqrt{3}}{3}\right) \quad (6)$$

$$tanline2 := x \mapsto fp\left(\frac{2 \cdot \text{sqrt}(3)}{3}\right) \cdot \left(x - \frac{2 \cdot \text{sqrt}(3)}{3}\right) + f\left(\frac{2 \cdot \text{sqrt}(3)}{3}\right)$$

$$tanline2 := x \mapsto fp\left(\frac{2\sqrt{3}}{3}\right) \left(x - \frac{2\sqrt{3}}{3}\right) + f\left(\frac{2\sqrt{3}}{3}\right) \quad (7)$$

$$plot([f(x), tanline1(x), tanline2(x), secantline(x)], x = -4..4)$$

