

with(plots) :

$$f := x \rightarrow \frac{\text{abs}(x)}{\text{sqrt}(2 - x^2)}$$

$$f := x \mapsto \frac{|x|}{\sqrt{2 - x^2}} \quad (1)$$

fp := D(f)

$$fp := x \mapsto \frac{\text{abs}(1, x)}{\sqrt{2 - x^2}} + \frac{|x|x}{(\sqrt{2 - x^2})^2 \sqrt{2 - x^2}} \quad (2)$$

combine(%)

$$x \mapsto \frac{\text{abs}(1, x)}{\sqrt{2 - x^2}} + \frac{|x|x}{(\sqrt{2 - x^2})^2 \sqrt{2 - x^2}} \quad (3)$$

fp(1)

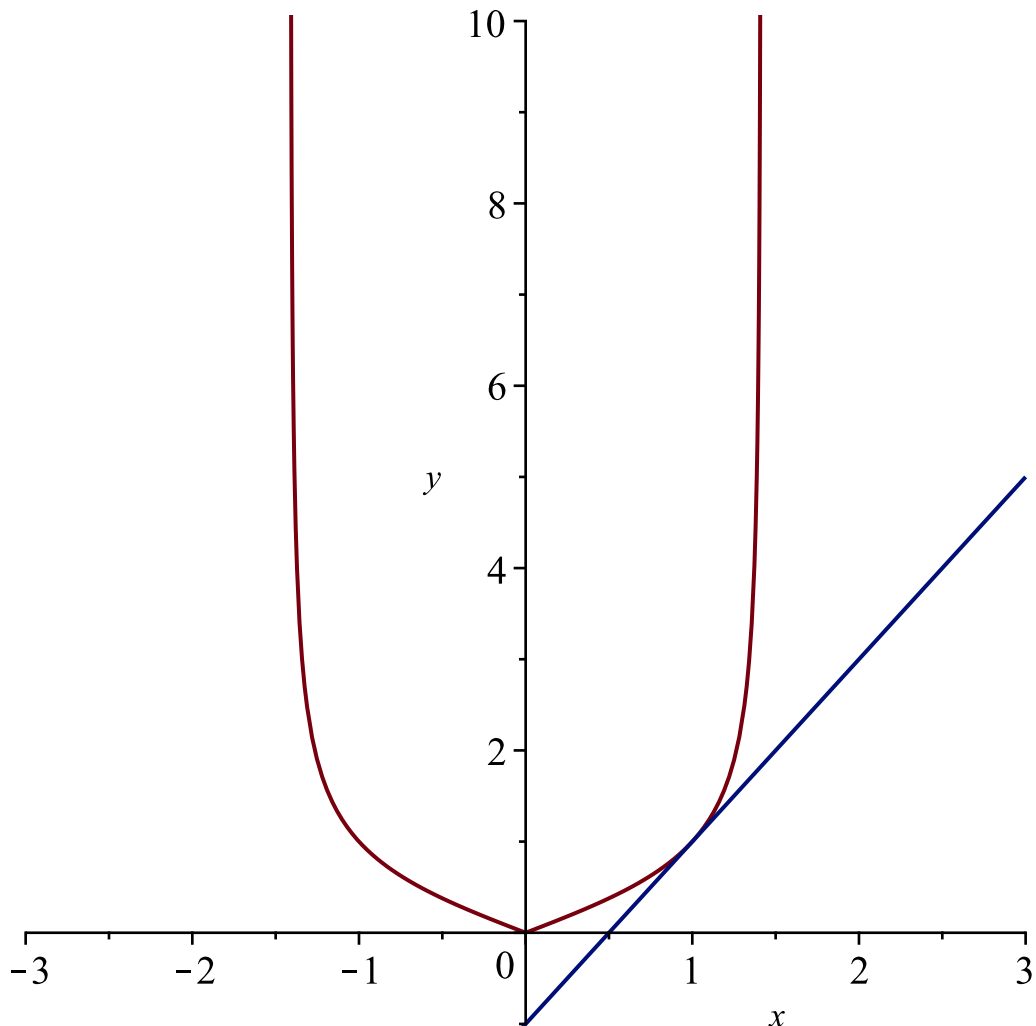
2

tanline := x → fp(1) · (x - 1) + 1

$$\text{tanline} := x \mapsto fp(1) (x - 1) + 1 \quad (4)$$

plot([f(x), tanline(x)], x=-3..3, y=-1..10)

(5)



$fpp := x \rightarrow D(fp)$

$fpp := x \mapsto D(fp)$ (6)

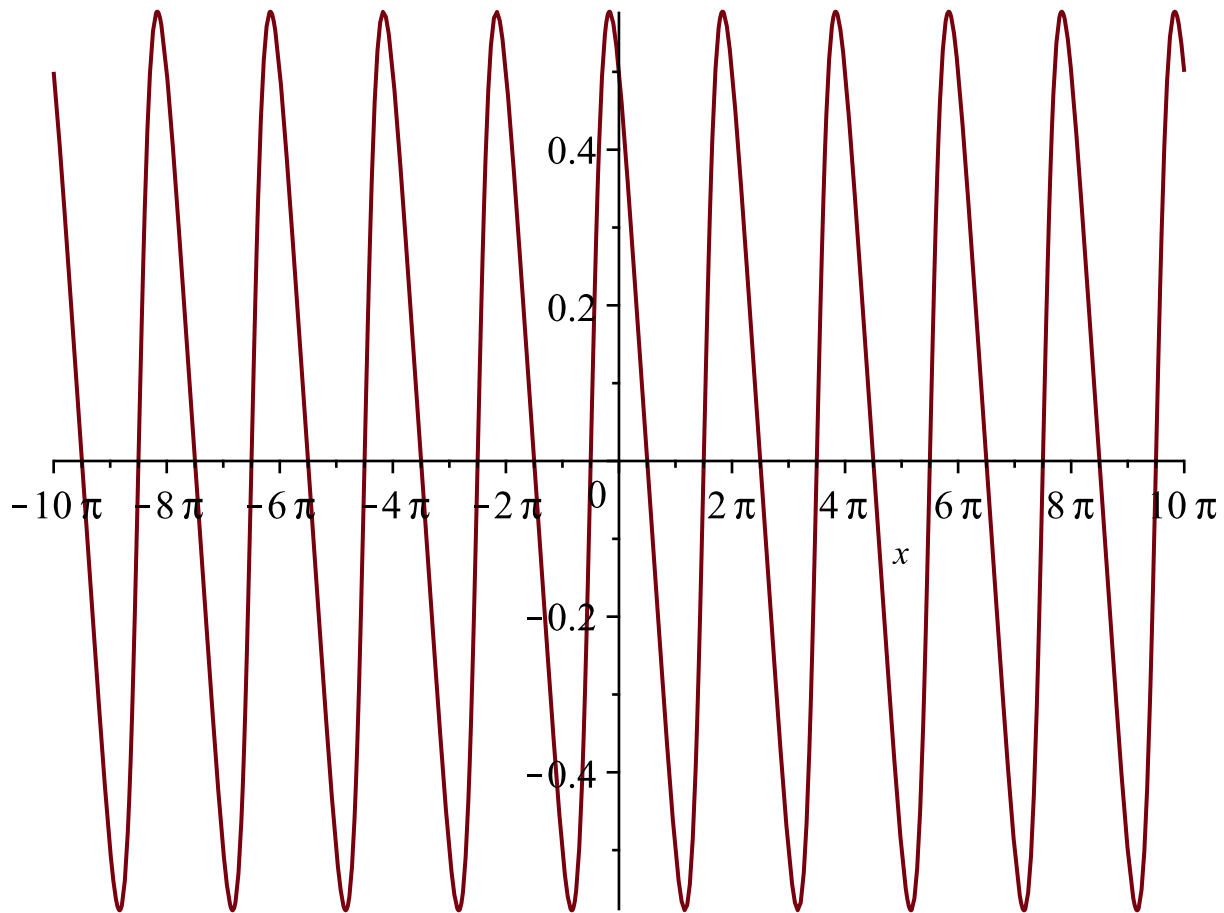
$fpp(x)$

$$x \mapsto \frac{\text{signum}(1, x)}{\sqrt{2-x^2}} + \frac{2 \text{abs}(1, x) x}{(\sqrt{2-x^2})^2 \sqrt{2-x^2}} + \frac{2 |x| x^2}{(\sqrt{2-x^2})^3 (2-x^2)} + \frac{|x|}{(\sqrt{2-x^2})^2 \sqrt{2-x^2}} + \frac{|x| x^2}{(\sqrt{2-x^2})^2 (2-x^2)^{3/2}}$$
 (7)

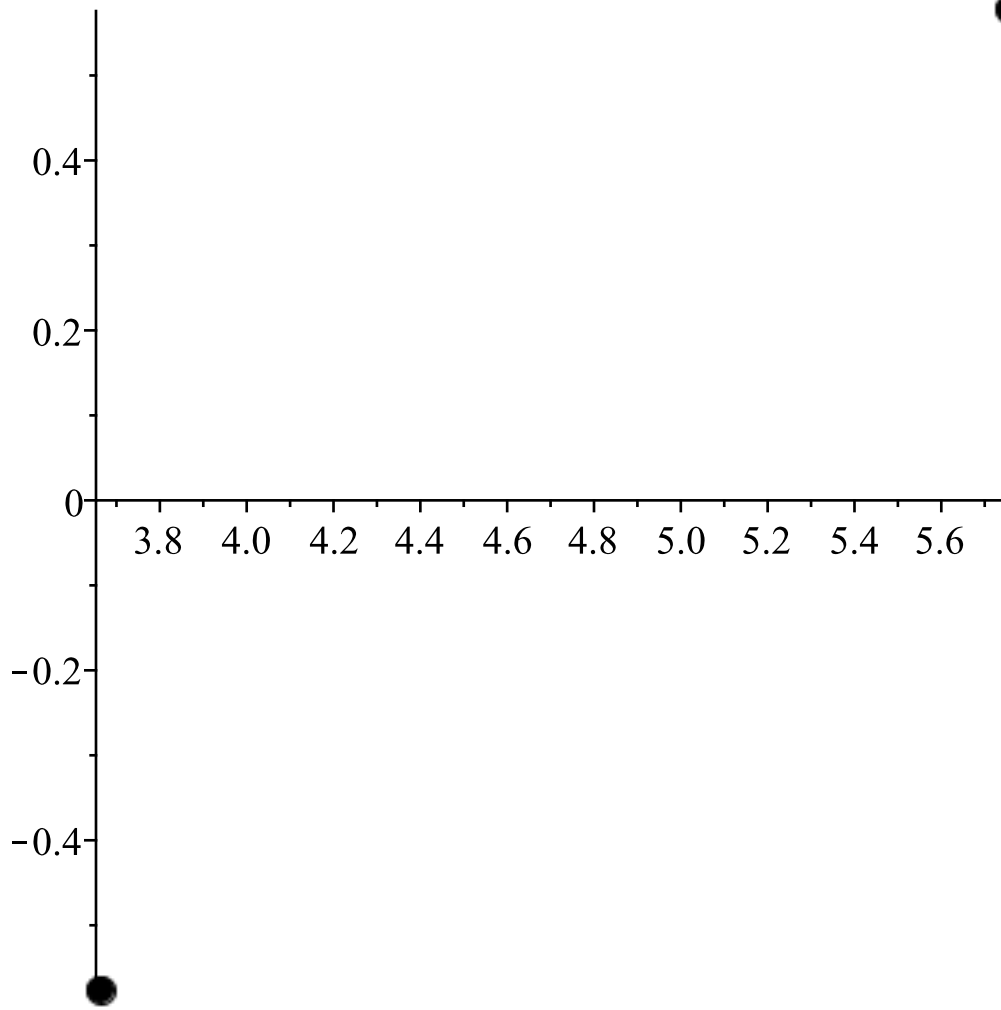
$f := x \rightarrow \frac{\cos(x)}{\sin(x) + 2}$

$f := x \mapsto \frac{\cos(x)}{\sin(x) + 2}$ (8)

$fplot := \text{plot}(f(x), x = -10 \cdot \text{Pi} .. 10 \cdot \text{Pi})$



$\text{points} := \text{pointplot}\left(\left[\left[\frac{7 \cdot \text{Pi}}{6}, f\left(\frac{7 \cdot \text{Pi}}{6}\right)\right], \left[\frac{11 \cdot \text{Pi}}{6}, f\left(\frac{11 \cdot \text{Pi}}{6}\right)\right]\right], \text{symbol} = \text{solidcircle}, \text{symbolsize} = 20\right)$



display([fplot, points])

