

$$s := t \mapsto 2 \cdot \sin(\text{Pi} \cdot t) + 3 \cdot \cos(\text{Pi} \cdot t)$$

$$s := t \mapsto 2 \sin(\pi t) + 3 \cos(\pi t) \quad (1)$$

$$s(t)$$

$$2 \sin(\pi t) + 3 \cos(\pi t) \quad (2)$$

$$sp := D(s)$$

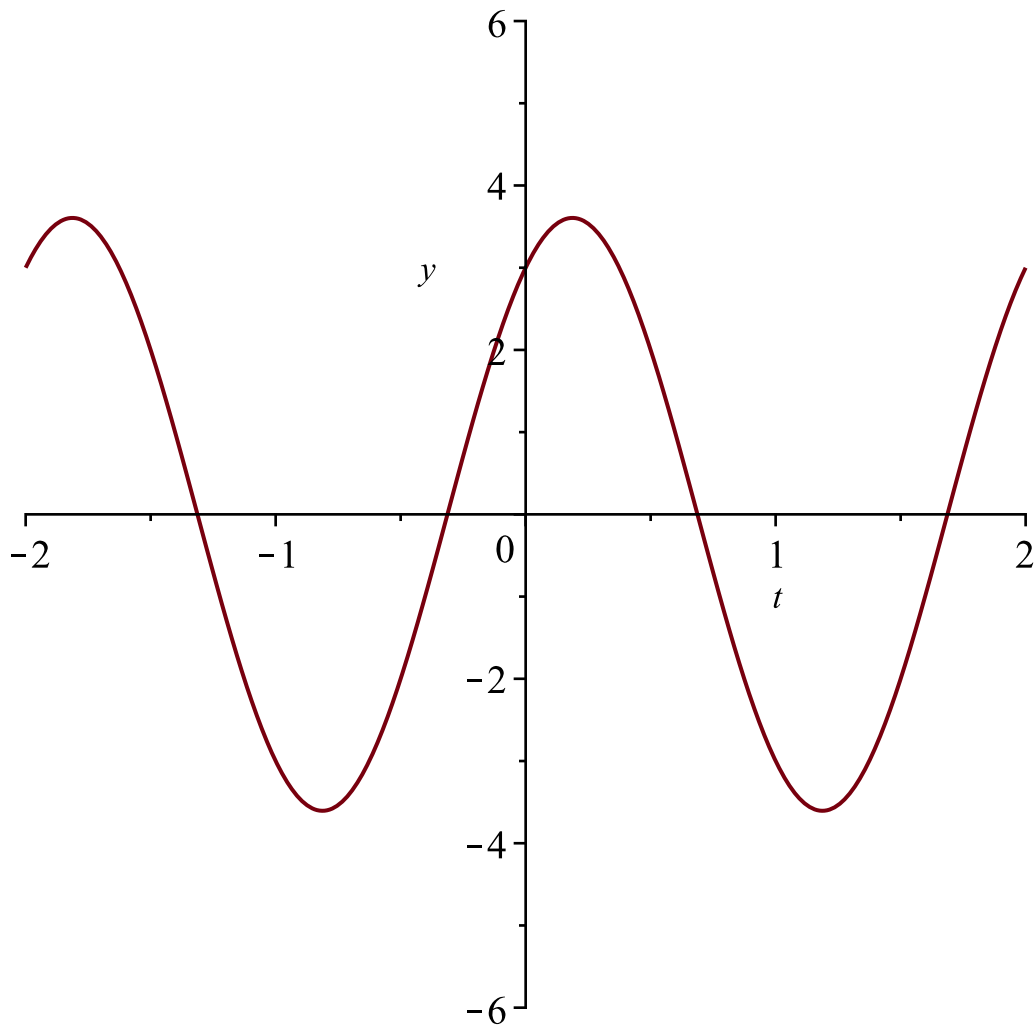
$$sp := t \mapsto 2 \pi \cos(\pi t) - 3 \pi \sin(\pi t) \quad (3)$$

$$sp(1)$$

$$-2 \pi \quad (4)$$

*with(plots) :*

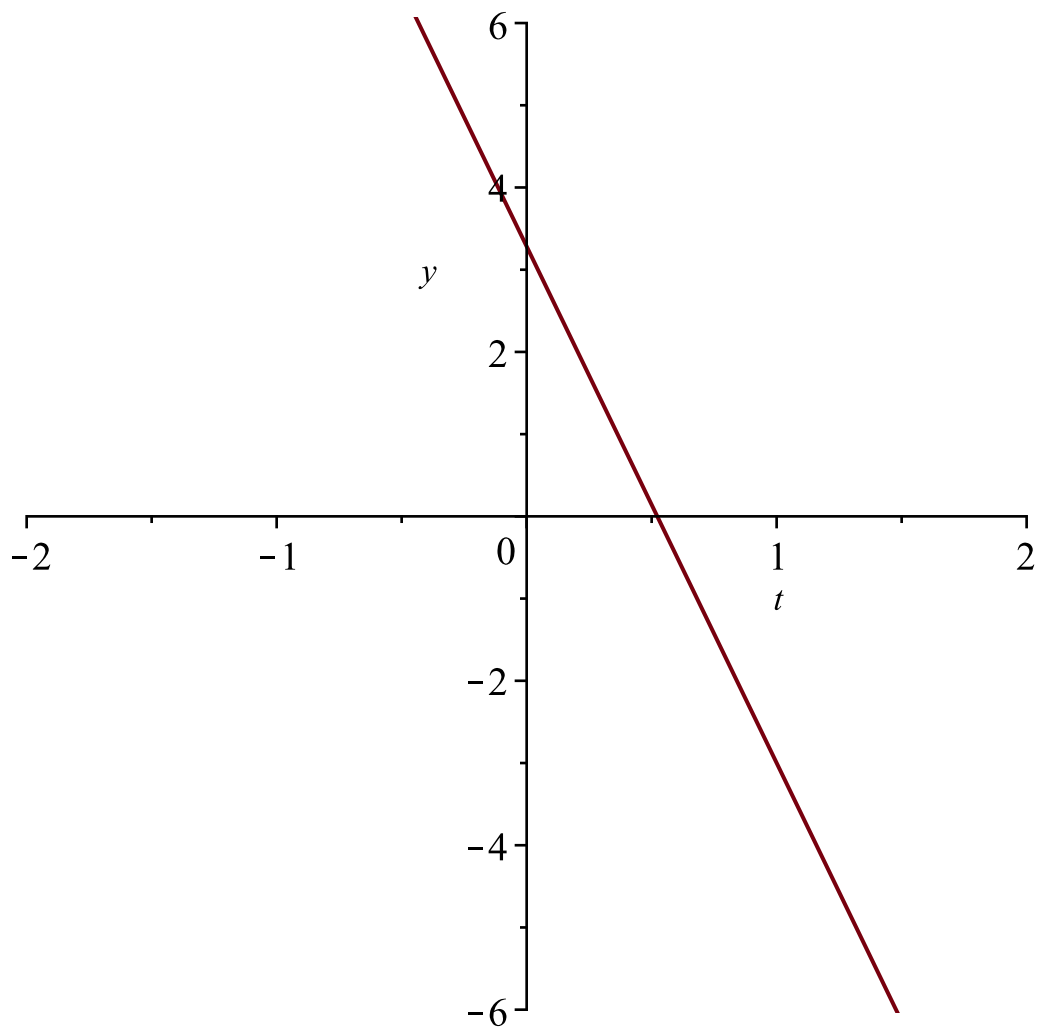
*splot := plot(s(t), t=-2..2, y=-6..6)*



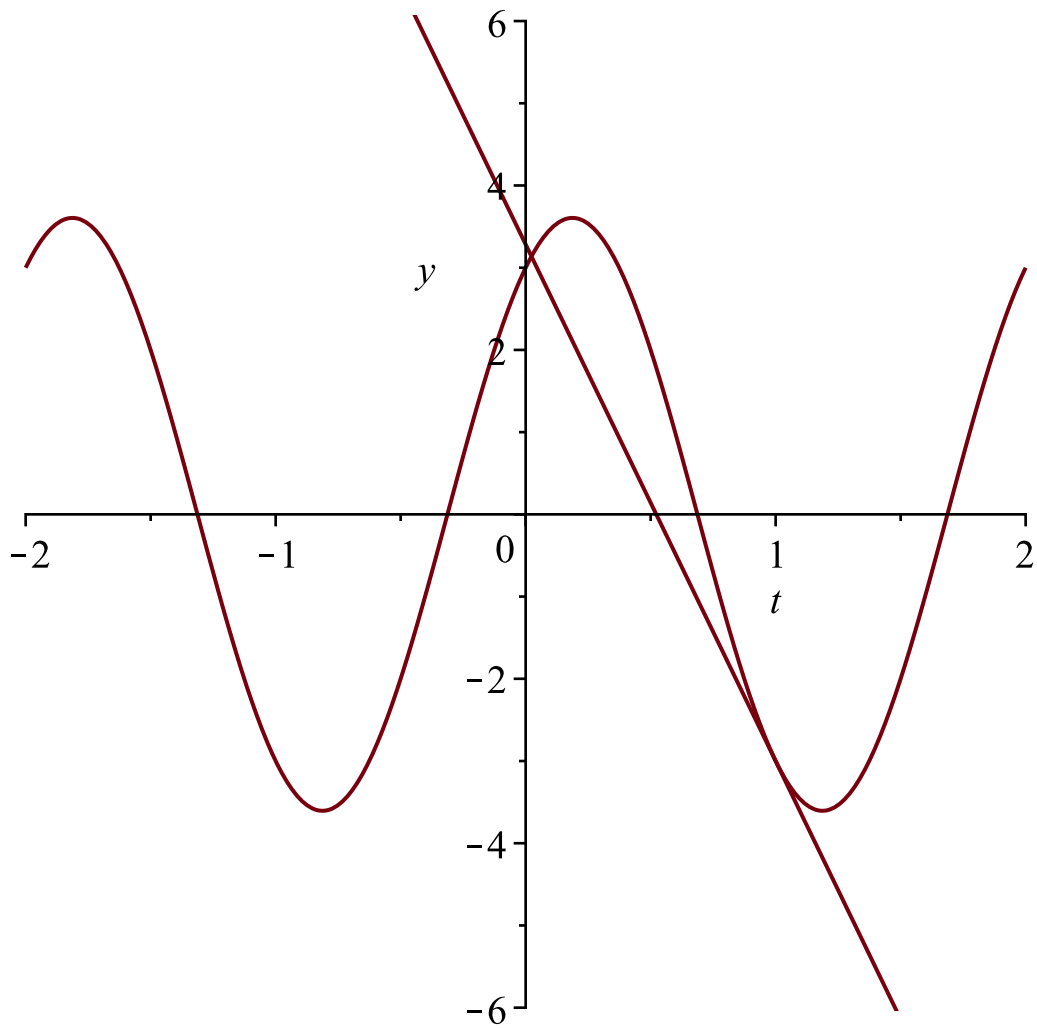
*tanline := t → -2 · Pi*  
*· (t - 1) + s(1)*

$$\text{tanline} := t \mapsto -2 \pi (t - 1) + s(1) \quad (5)$$

*tanplot := plot(tanline(t), t=-2..2, y=-6..6)*



`display([splot, tanplot])`

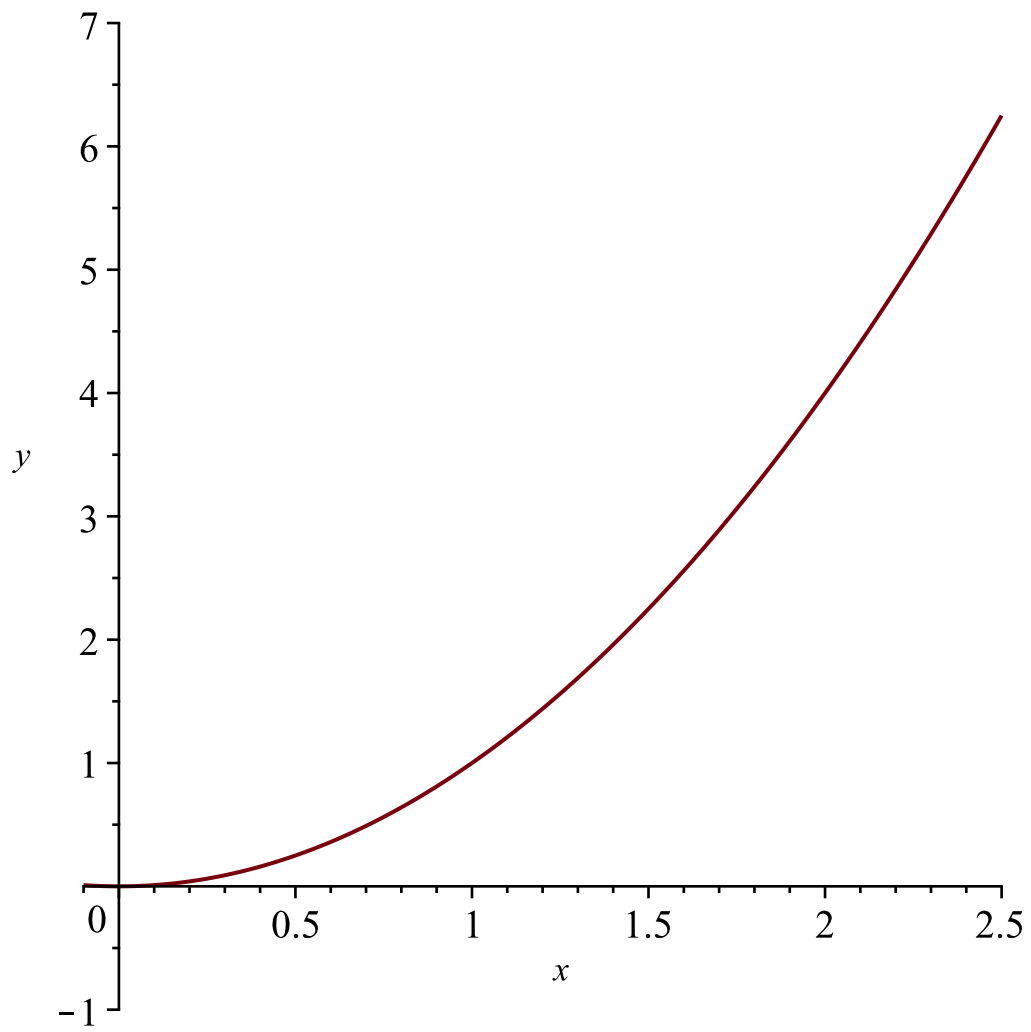


$f := x \mapsto x^2$

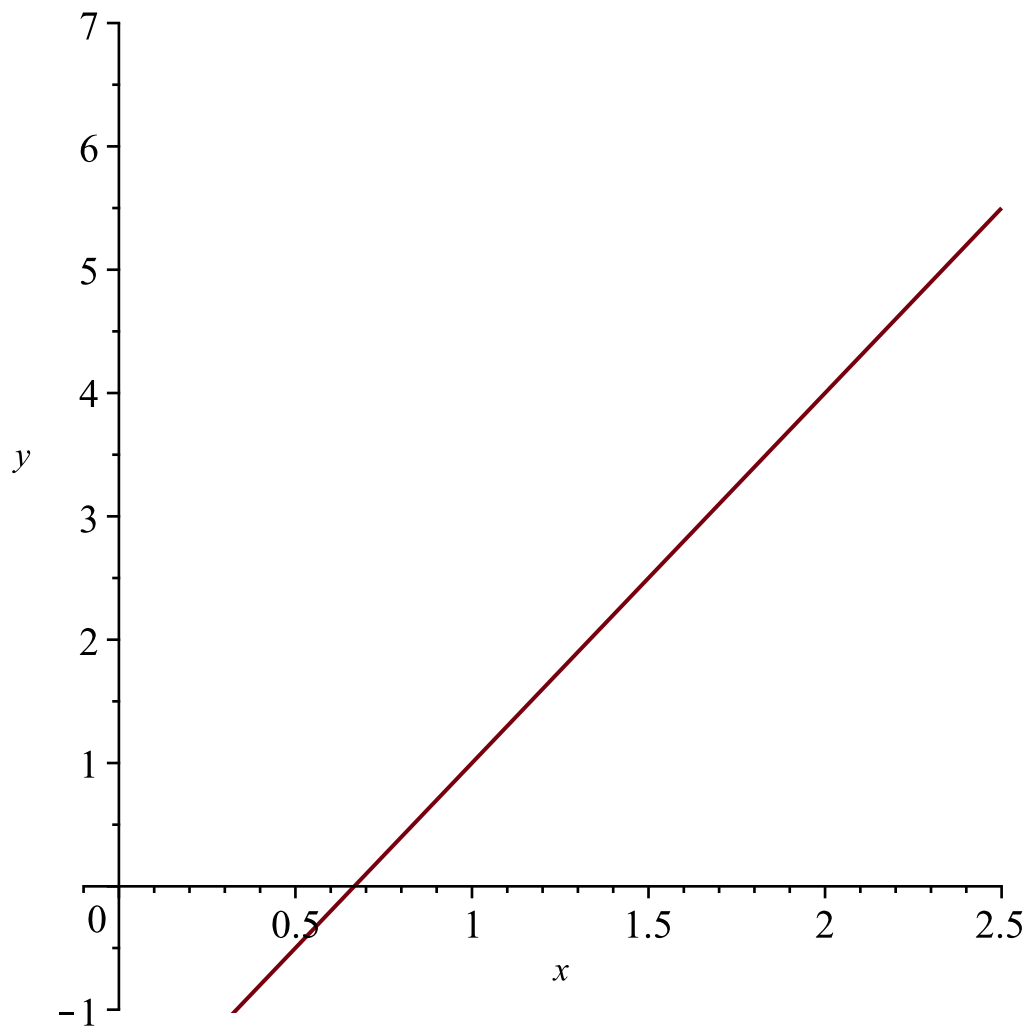
$f := x \mapsto x^2$

$fplot := plot(f(x), x = -1 .. 2.5, y = -1 .. 7)$

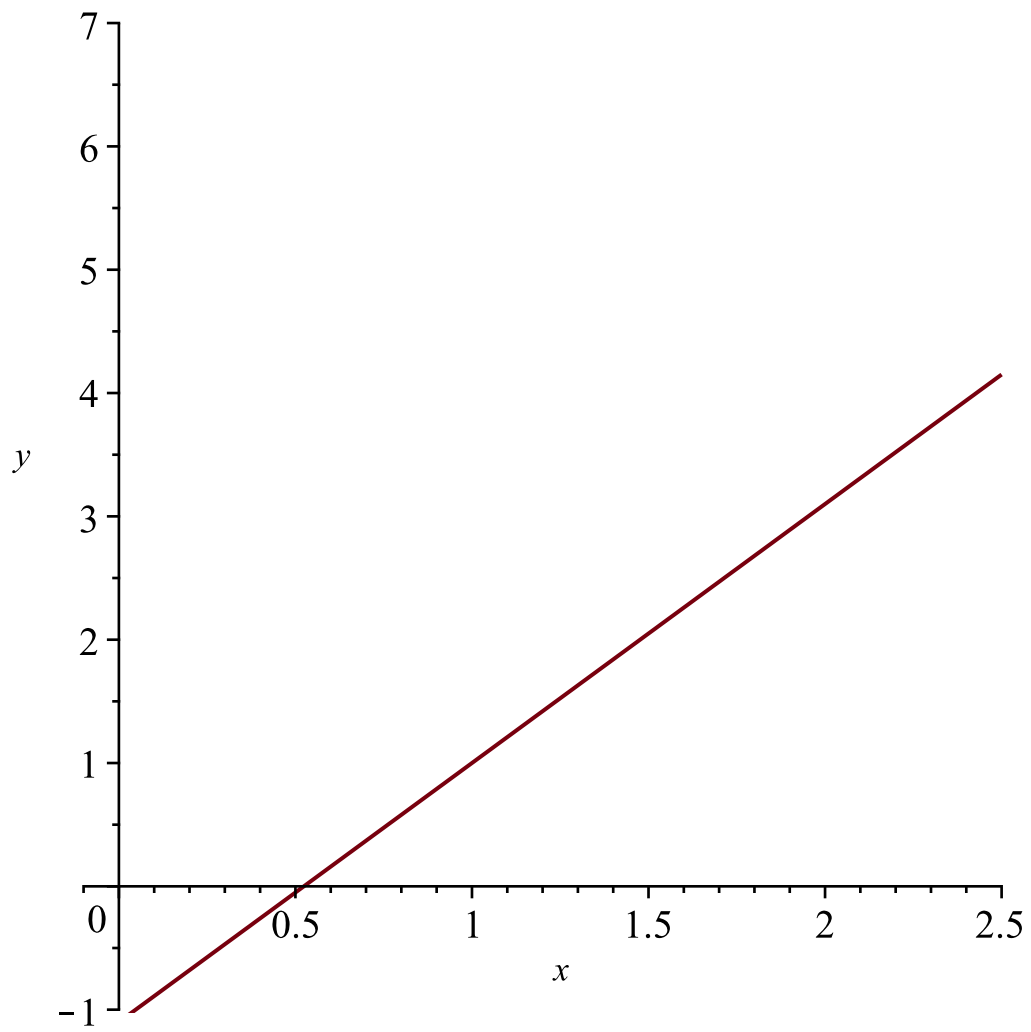
(6)



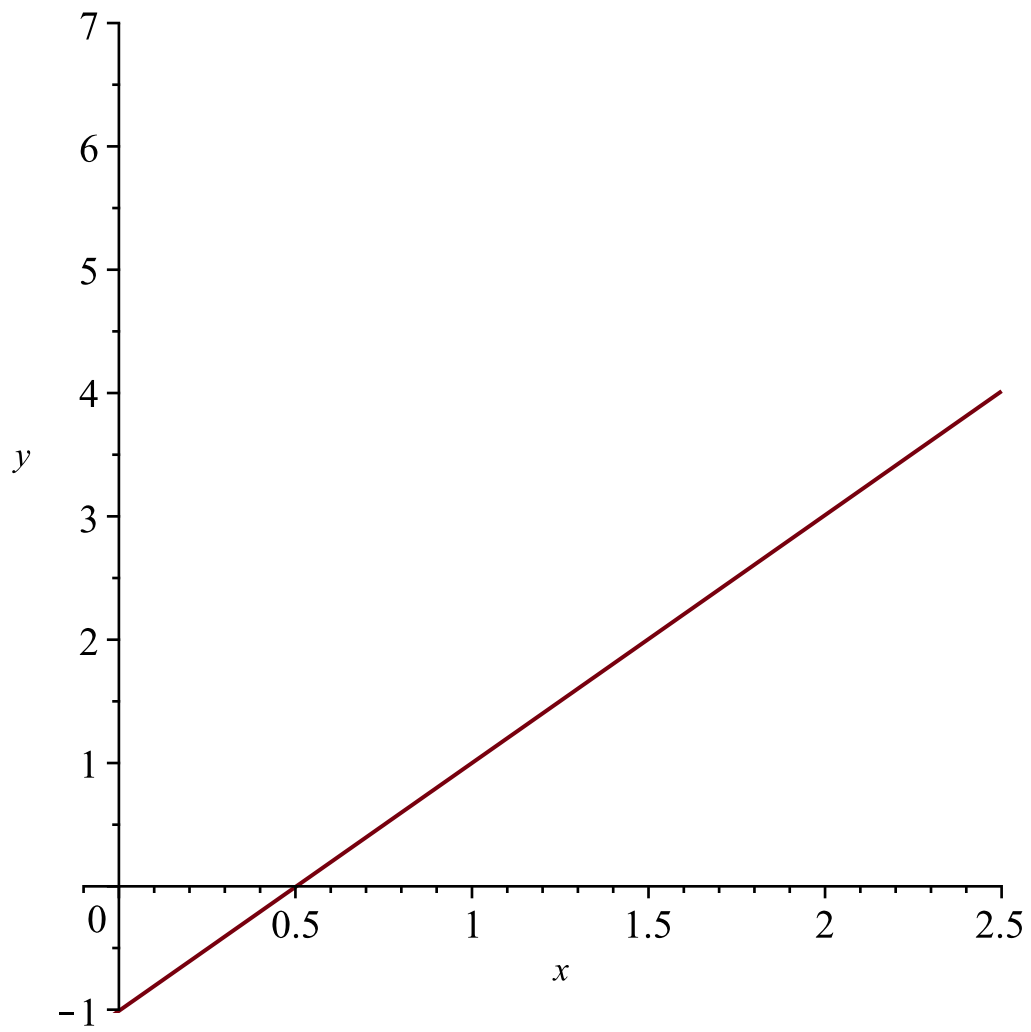
*line1plot := plot(line1(x), x=-.1 ..2.5, y=-1 ..7)*



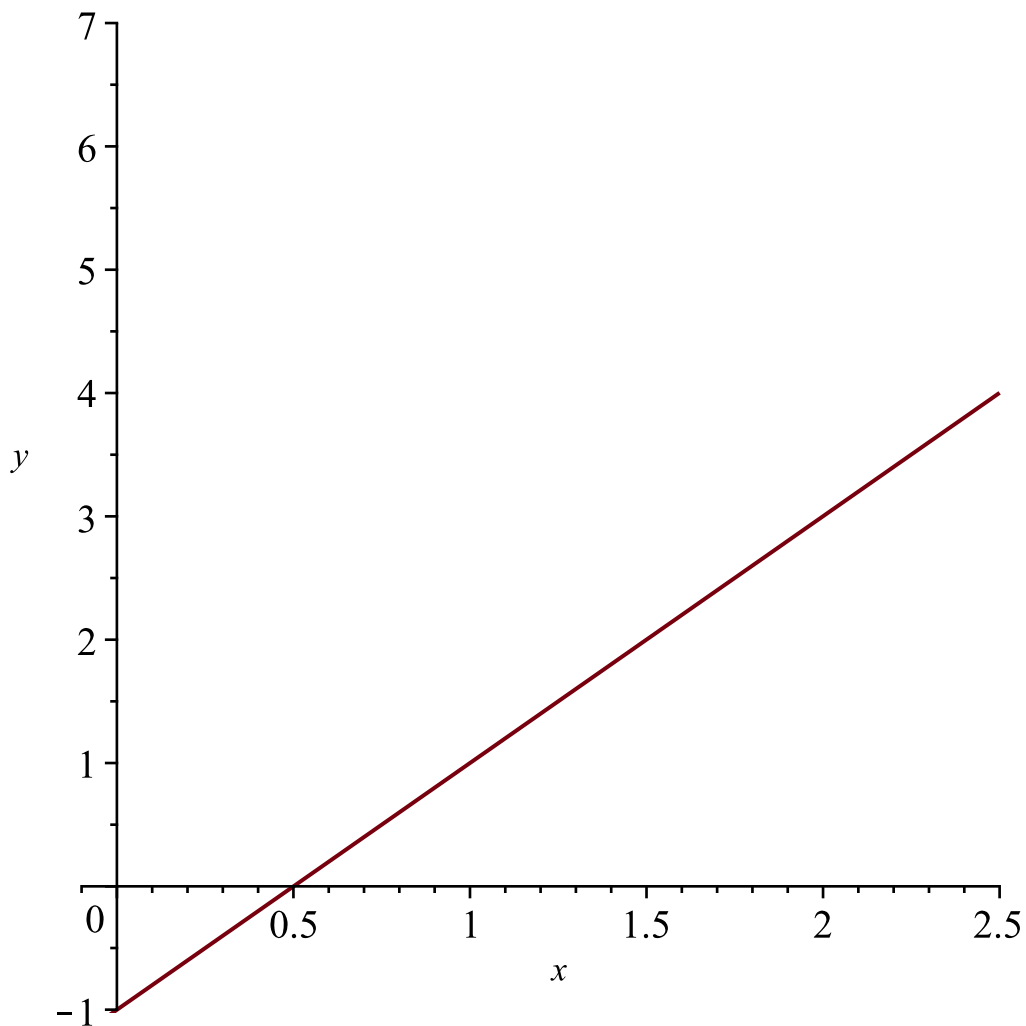
`line2plot := plot(line2(x), x=-.1..2.5, y=-1..7)`



*line3plot := plot(line3(x), x=-.1 ..2.5, y=-1 ..7)*



`line4plot := plot(line4(x), x=-1..2.5, y=-1..7)`



$$m := (x, h) \rightarrow \frac{(f(x+h) - f(x))}{h}$$

$$m := (x, h) \mapsto \frac{f(x+h) - f(x)}{h} \quad (7)$$

$$line1 := x \rightarrow m(1, 1) \cdot (x - 1) + f(1)$$

$$line1 := x \mapsto m(1, 1) (x - 1) + f(1) \quad (8)$$

$$line2 := x \rightarrow m(1, .1) \cdot (x - 1) + f(1)$$

$$line2 := x \mapsto m(1, 0.1) (x - 1) + f(1) \quad (9)$$

$$line3 := x \rightarrow m(1, .01) \cdot (x - 1) + f(1)$$

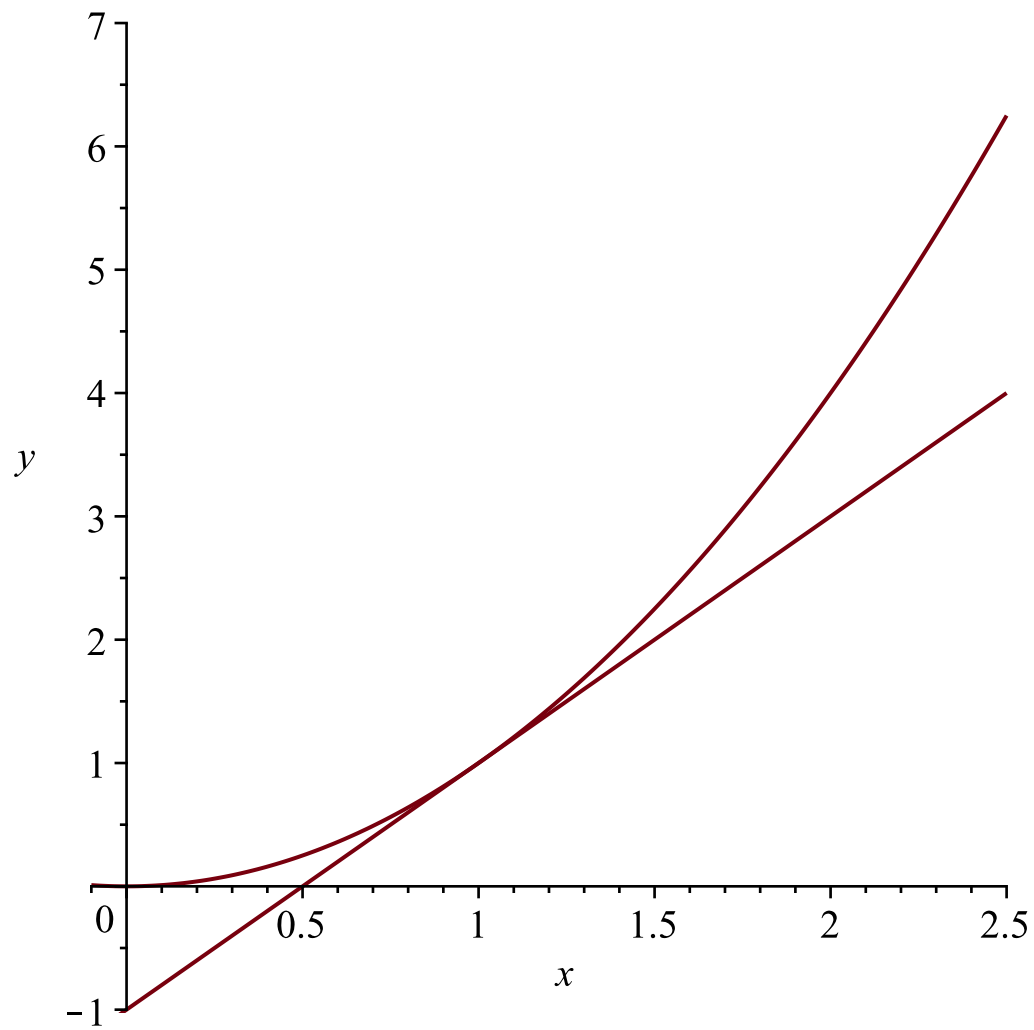
$$line3 := x \mapsto m(1, 0.01) (x - 1) + f(1) \quad (10)$$

$$line4 := x \rightarrow m(1, .001) \cdot (x - 1) + f(1)$$

$$line4 := x \mapsto m(1, 0.001) (x - 1) + f(1) \quad (11)$$

display([fplot, line5plot])





$line5 := x \rightarrow m(1, .00001) \cdot (x - 1) + f(1)$

$line5 := x \mapsto m(1, 0.00001) (x - 1) + f(1)$

$line5plot := plot(line5(x), x = -.1 .. 2.5, y = 0 .. 7)$

**(12)**

