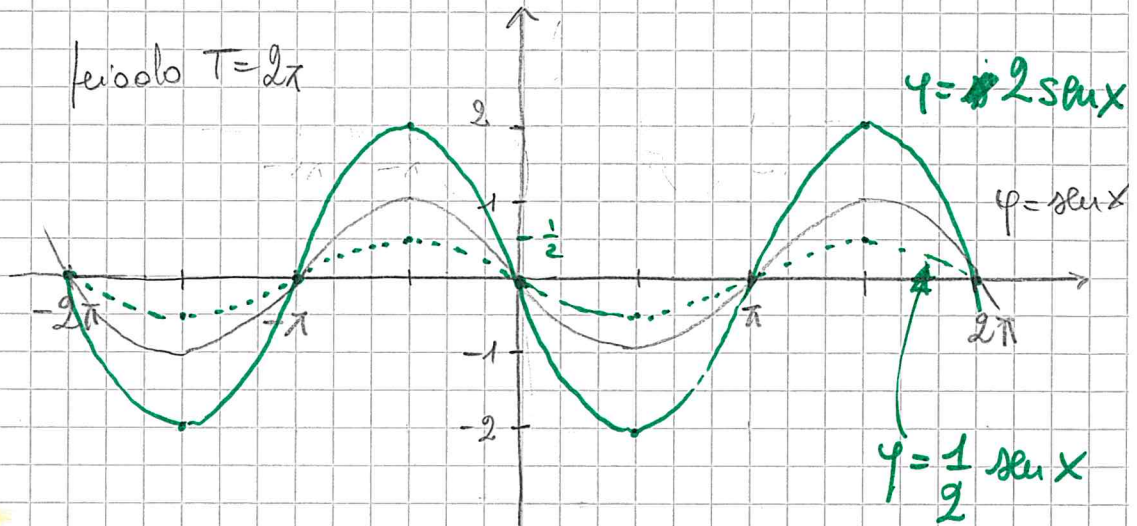


TRASFORMAZIONI GRAFICHE: DILATAZIONE E CONTRAZIONE

$$f(x) = \sin x \quad D: \mathbb{R}$$

periodo $T = 2\pi$



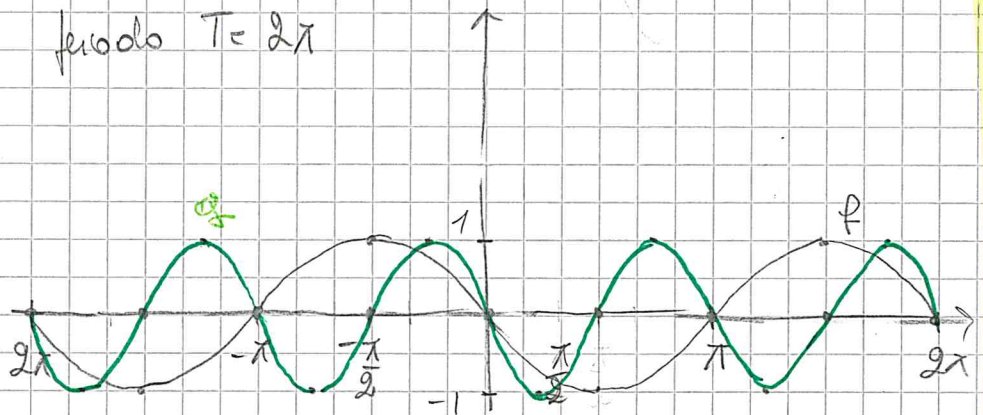
$$g(x) = 2 \sin x$$

$$h(x) = \frac{1}{2} \sin x$$

- il periodo non cambia
- cambia il valore di massimo e minimo assoluti

$$f(x) = \sin 2x \quad D: \mathbb{R}$$

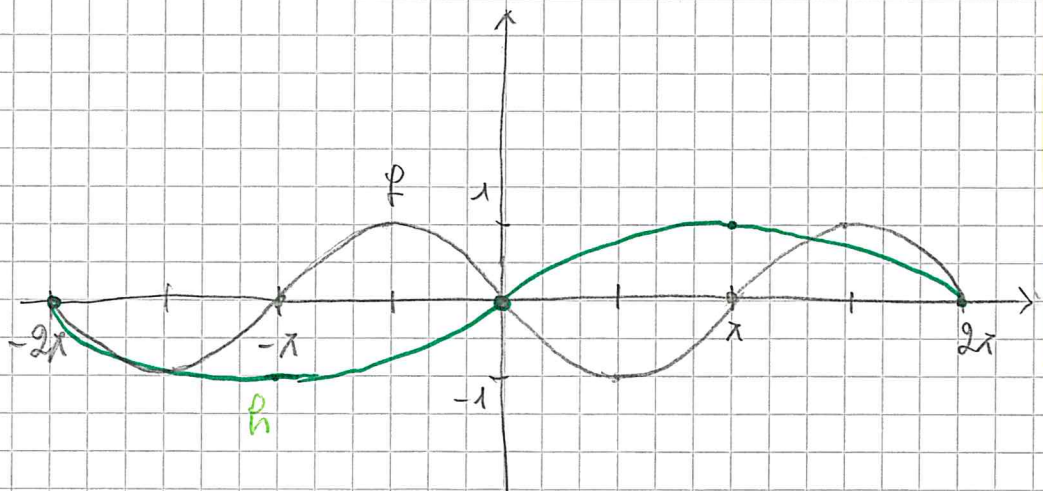
periodo $T = \pi$



$$g(x) = \sin 2x$$

- il periodo si dimezza $T = \pi$
- non cambia il valore di max e min assoluti

$$h(x) = \sin \frac{1}{2} x$$



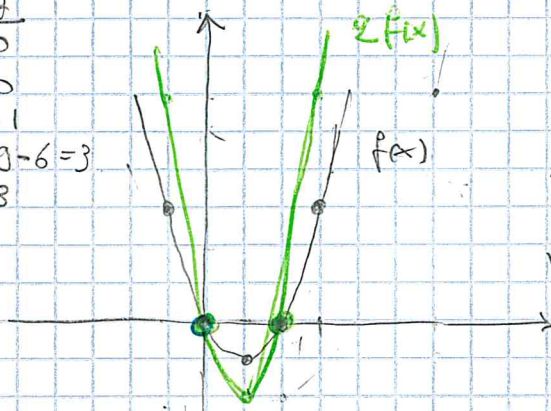
- il periodo raddoppia $T = 4\pi$
- non cambia il valore di max e min assoluti

PARABOLA

$$f(x) = x^2 - 2x$$

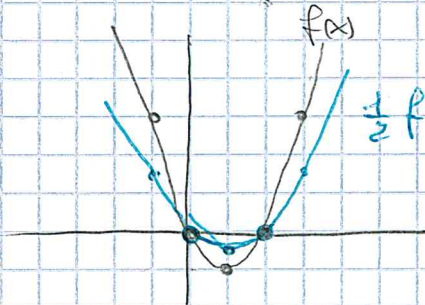
x	y
0	0
2	0
1	-1
3	9-6=3
-1	3

$$g(x) = 2f(x)$$



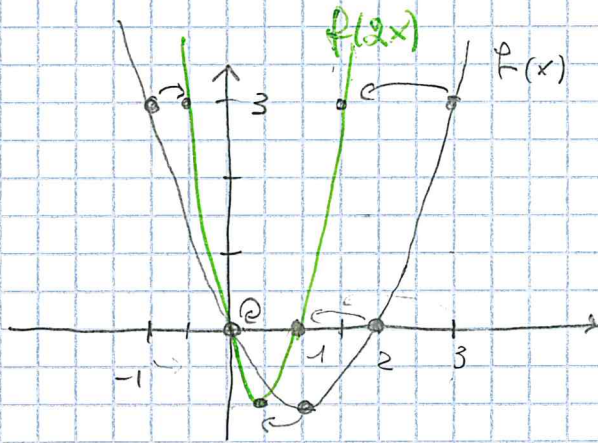
↑ dilatazione delle y

$$g(x) = \frac{1}{2}f(x)$$



↓ contrazione delle y

$$g(x) = f(2x)$$



← → contrazione delle x

$$x=1 \mapsto f(2) = 0$$

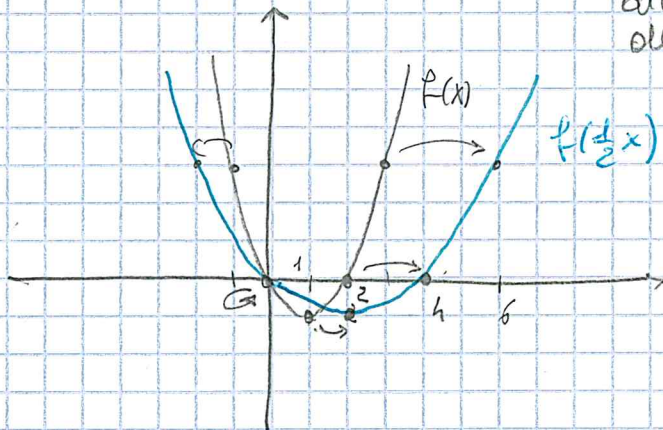
$$x=0 \mapsto f(0) = 0$$

$$x = \frac{1}{2} \mapsto f(1) = -1$$

$$x = \frac{3}{2} \Rightarrow f(3) = 3$$

$$x = -\frac{1}{2} \mapsto f(-1) = 3$$

$$g(x) = f\left(\frac{1}{2}x\right)$$



← → dilatazione delle x

$$x=2 \mapsto f(2) = 0$$

$$x=0 \mapsto f(0) = 0$$

$$x=2 \mapsto f(1) = -1$$

$$x=6 \mapsto f(3) = 3$$

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