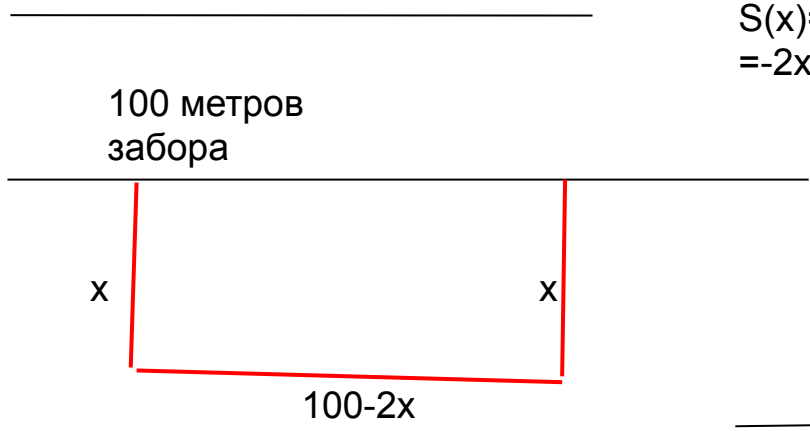
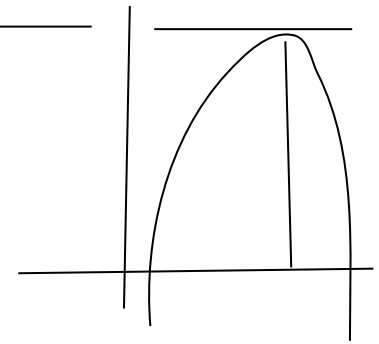
(f+g)’ = f’ + g’
(fg)’ = f’g + g’f
(f/g)’=(f’g - g’f) / g^2
(const*f)’=const (f)’

Производная сложной ф-ии
(f(g))’= f ’ * g’



S(x)=x*(100-2x)=
=-2x^2+100x



y=ax^2+bx+c
x=-b/(2a)
x=100/4=25
y=1250

S’(x)=(-2x^2+100x)’=
=(-2x^2)’ + (100x)’=
=-2(x^2)’ + 100(x)’=
=-4x+100=tgA=0
-4x+100=0
x=25

f’=[f(x0+dx) - f(x0)] / dx
g’=[g(x0+dx) - g(x0)] / dx

(f+g)’ = [f(x0+dx) + g(x0+dx) - (f(x0) + g(x0))] / dx = [f(x0+dx) - f(x0)] /dx + [g(x0+dx) - g(x0)] / dx=f’ + g’

(fg)’ = [f(x0+dx)*g(x0+dx) - f(x0)*g(x0)] / dx = [f(x0+dx)*g(x0+dx)+ *g(x0+dx)f(x0)* - g(x0+dx)f(x0) - f(x0)*g(x0)] / dx=
= [{f(x0+dx)-f(x0) }g(x0+dx) -f(x0) {*g(x0+dx) -gx0 }*] / dx ={f(x0+dx)-f(x0) }g(x0+dx)/dx -f(x0) {*g(x0+dx) -gx0 }* / dx=
=f’ * g(x0+dx) + f(x0) * g’ = f’ * g(x0) + f(x0) * g’ = f’*g + f*g’

(f/g)’ = [f(x0+dx)/g(x0+dx) - f(x0)/g(x0)] / dx= [{f(x0+dx)g(x0) - f(x0)g(x0+dx)}/g(x0+dx)g(x0)] / dx=
=[{f(x0+dx)g(x0) - f(x0)g(x0+dx)+g(x0)f(x0)-g(x0)f(x0)}/g(x0+dx)g(x0)] / dx=
={g(x0)(f(x0+dx)-f(x0)) - f(x0)(g(x0+dx)-g(x0))}/g(x0+dx)g(x0) dx ={g(x0)(f(x0+dx)-f(x0))}/g(x0+dx)g(x0) dx -
f(x0)(g(x0+dx)-g(x0))/g(x0+dx)g(x0) dx={g(x0)f’}/g(x0+dx)g(x0) - f(x0)g’/g(x0+dx)g(x0)={g(x0)f’- f(x0)g’}/g(x0+dx)g(x0)=
={g(x0)f’- f(x0)g’}/g(x0)g(x0) = (g*f’ -f*g’)/g^2

((x^3+5)^2)’ = 2*(x^3+5) * (x^3+5)’=2*(x^3+5) * 3x^2’