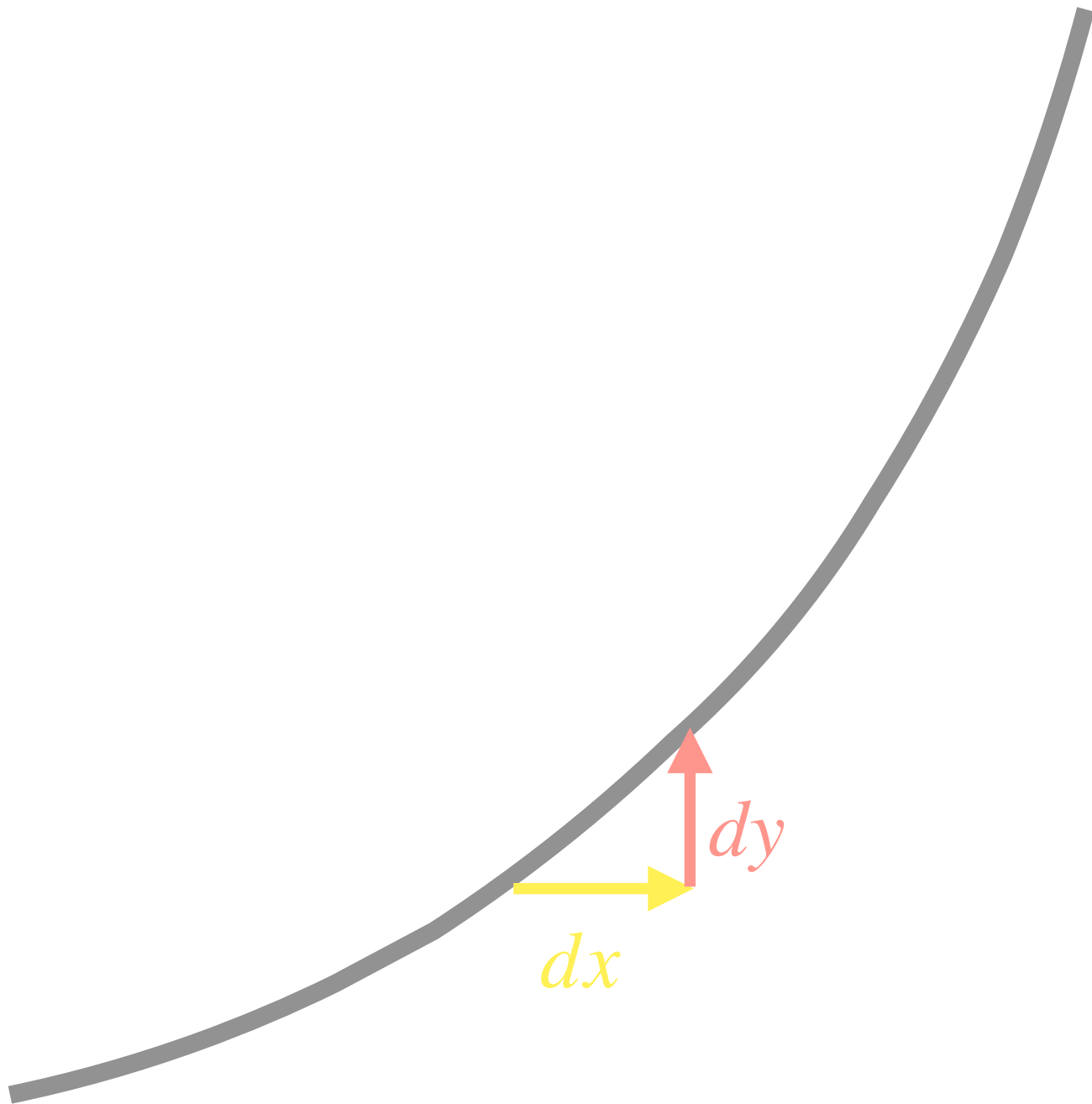




derivatives recap



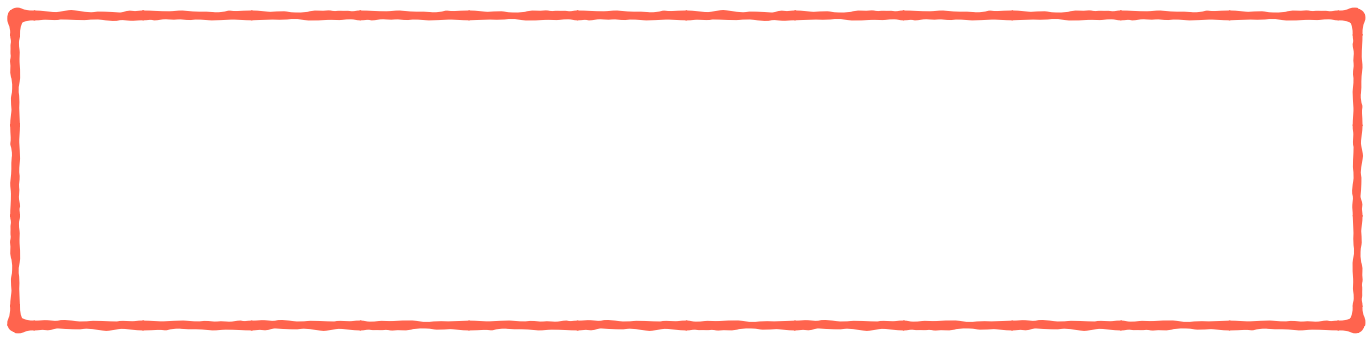


$dx$



$dy$



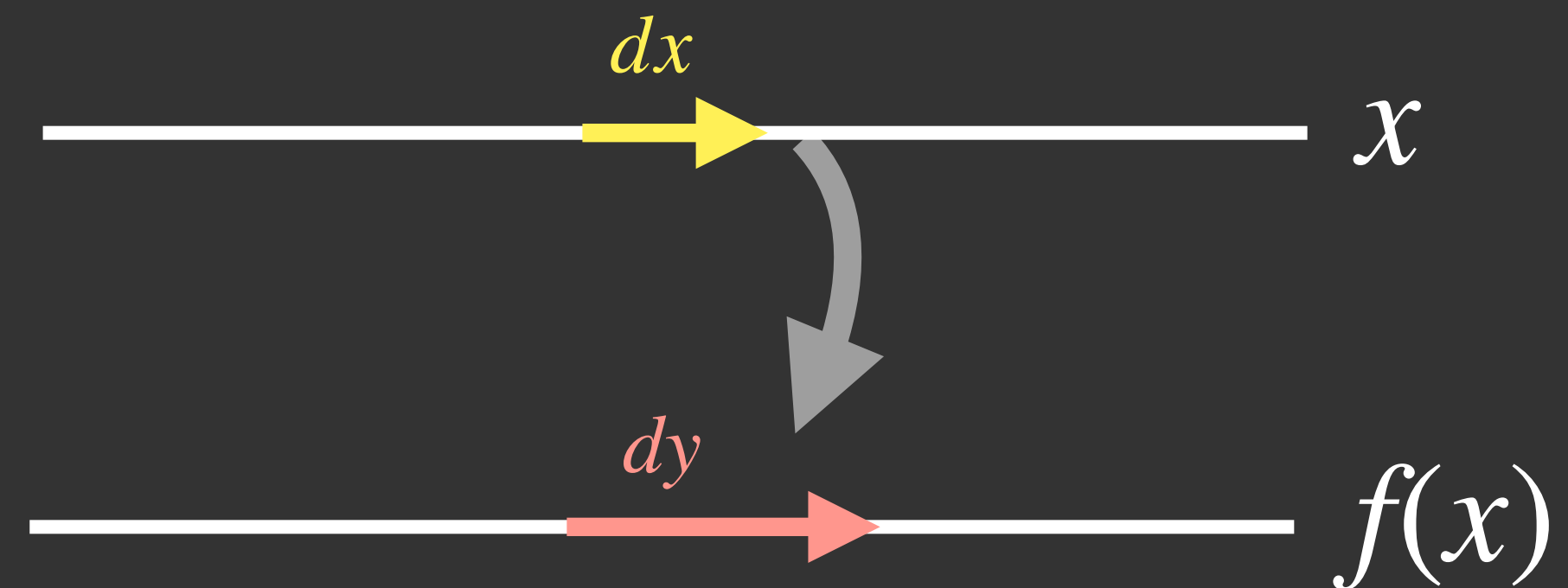
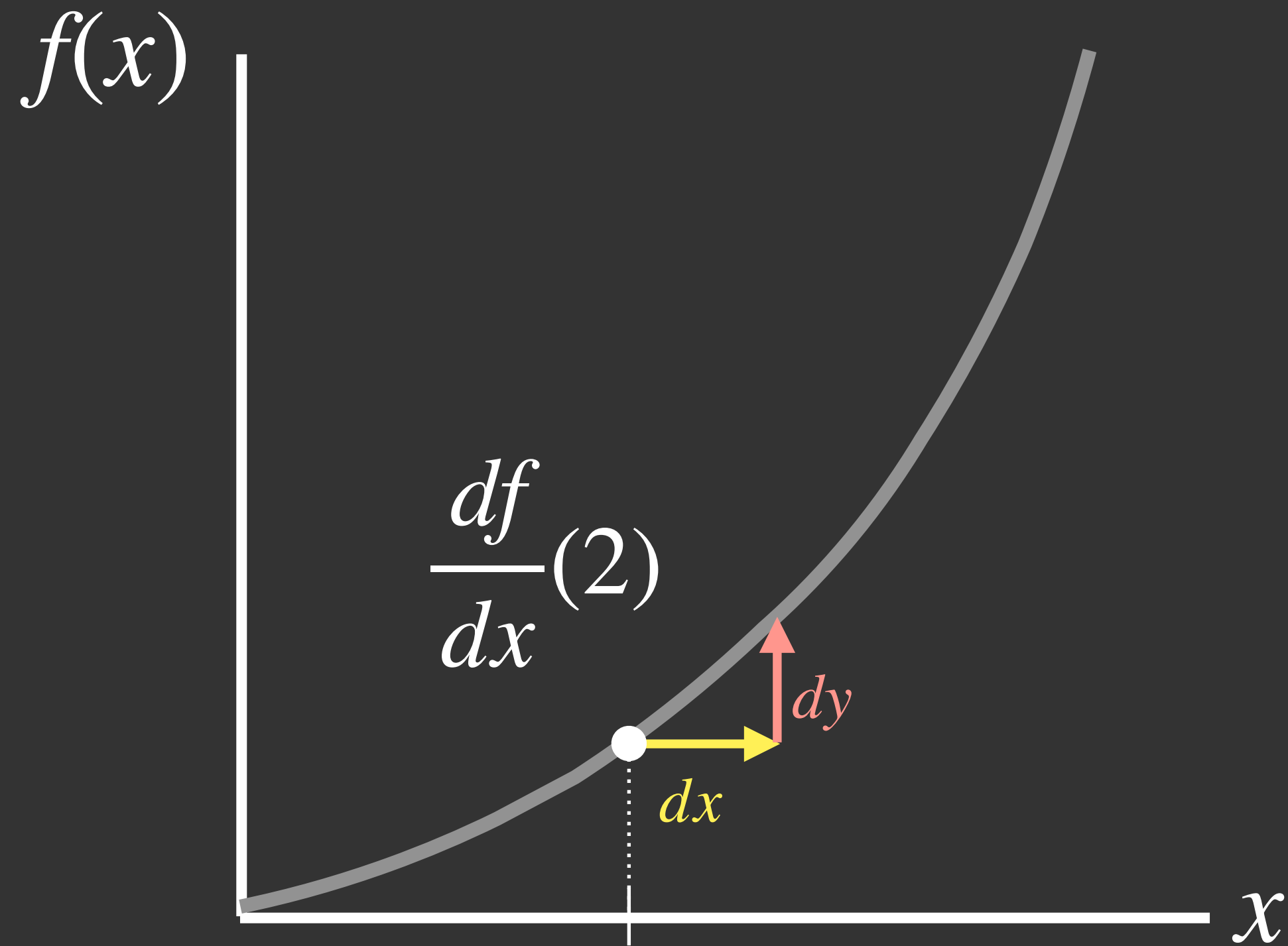




# derivatives recap

Before: assume  $f(x)$  with derivative  $\frac{df}{dx}$ . What does this mean?

$$\frac{df}{dx} = \lim_{h \rightarrow 0} \frac{f(a+h) - f(a)}{h}$$





# partial derivatives

Now: assume  $f(x, y)$  with  $\frac{\partial f}{\partial x}$  and  $\frac{\partial f}{\partial y}$

$$\frac{\partial f}{\partial x} = \lim_{h \rightarrow 0} \frac{f(a + h, b) - f(a, b)}{h}$$

$$\frac{\partial f}{\partial y} = \lim_{h \rightarrow 0} \frac{f(a, b + h) - f(a, b)}{h}$$

•  
• for  $f(x, y, z, \dots)$   
•