

Suppose we have a function  $f(x)$ , and all we know about it is that  $f(2) = 1$  and  $f'(2) = 3$ .

Is there any way we could approximate  $f(1.9)$ ?

Find tangent line:

$$y = f'(2)(x-2) + f(2)$$

$$y = 3(x-2) + 1$$

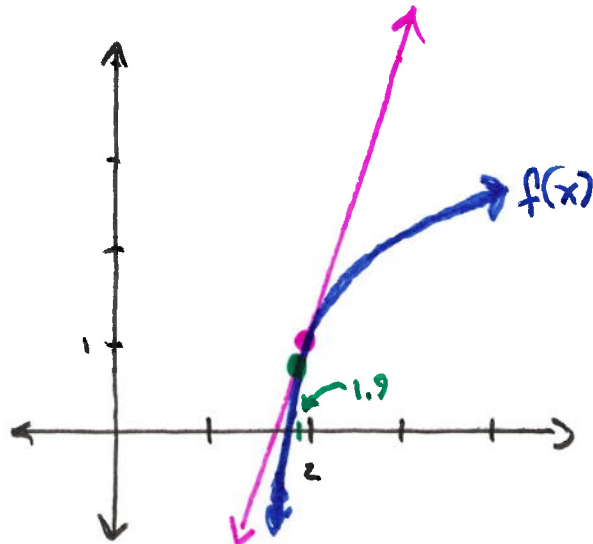
When  $x = 1.9$ , on the tangent line,

$$y = 3(1.9-2) + 1$$

$$= 3(-.1) + 1$$

$$= -.3 + 1$$

$$= \boxed{.7}$$



$$y = f'(a)(x-a) + f(a)$$

(tangent line to  $f(x)$   
at  $x=a$ )  $a=2$  here