

Power Rule

$$\frac{d}{dx} [x^n] =$$

$$\frac{d}{dx} [x^n] = n \cdot x^{n-1}$$

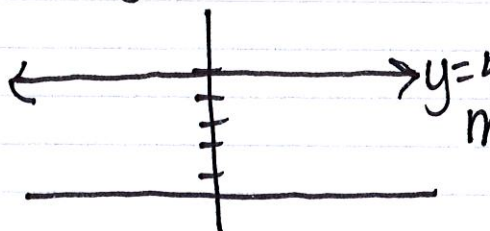
Multiply the power • leading coeff.  
& drop the power by 1

Constant Rule

$$\frac{d}{dx} [\text{constant}] =$$

$$\frac{d}{dx} [\text{constant}] = \underline{0}$$

$y=5$  then  $y'=0$

Because 

e Rule

$$\frac{d}{dx} [e^x] =$$

$$\frac{d}{dx} [e^x] = \underline{e^x}$$

$$\frac{d}{dx} [e^{AT}] =$$

$$\frac{d}{dx} [e^{AT}] = \underline{e^{AT} \cdot \frac{d}{dx} [AT]}$$

AT: Anything

What is the sum and constant multiple rule of differentiable functions?

Sum Rule:  $(f + g)' =$   
Constant Multiple Rule:  $(cf)' =$

You can break up addition & subtraction!

Sum Rule:  $(f + g)' = f'(x) + g'(x)$   
Constant Multiple Rule:  $(cf)' = c \cdot f'(x)$

⚠ Notice there is no Rule saying you can break up mult. / division!