

### 3.2: Product & Quotient Rules.

If  $f$  &  $g$  are differentiable,

$$(f \cdot g)' = f'g + g'f$$

$$\left(\frac{f}{g}\right)' = \frac{f'g - g'f}{g^2}$$

examples Differentiate

$$y = (2x+3)(5x^2-4x)$$

$$y = e^x (4x^2 - \sqrt{x})$$

$$y = \frac{t^2-1}{t^2+t-2}$$

$$y = \frac{5x-1}{2\sqrt{x}} \quad (2 \text{ ways})$$

$$\text{or } y = \frac{v^3 - 2v\sqrt{v}}{v}$$

$$y = \frac{e^t}{t + t\sqrt{t}}$$

ex: Find the eqn. of the tangent line to  $y = \frac{e^x}{x}$   
@ the point  $(1, e)$ .