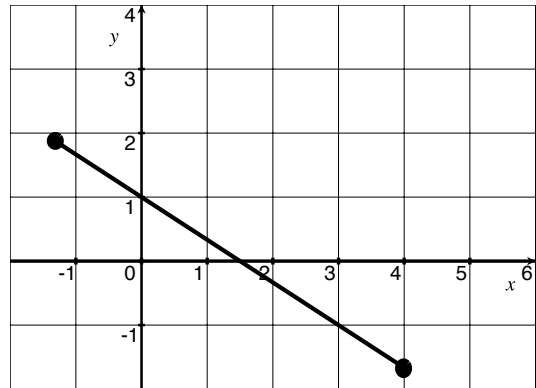
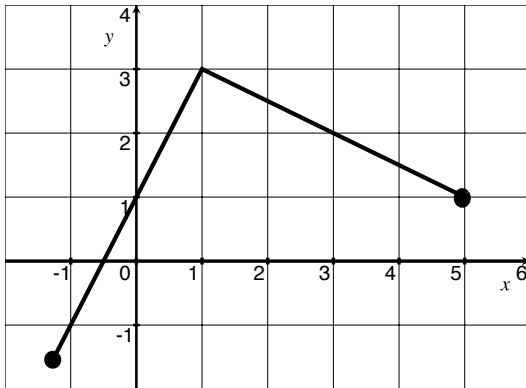


Derivatives of Products & Quotients with Trig.

1. Let f be the function graphed on the left and g be the function graphed on the right.



Estimate the following (if possible):

$$(f \cdot g)'(-1)$$

$$\frac{d}{dx}(fg)|_{x=0}$$

$$(fg)'(1)$$

$$(g \cdot f)'(3)$$

2. Find:

$$\frac{d}{dx} \left(\frac{e^x}{x} \right)$$

$$(x^3 \sin(x))'$$

$$\frac{d}{dx} (ex^2)$$

3. Find:

$$\frac{d}{dx} \left(\frac{e^x}{3x+2} \right)$$

$$\left(\frac{3x^2 - \sqrt{x}}{x} \right)'$$

4. Use the fact that $\sec(x) = \frac{1}{\cos(x)}$ and $[\cos(x)]' = -\sin(x)$ to *compute* $[\sec(x)]'$.
That is, convince yourself that you don't need to *memorize* the derivative of $\sec(x)$,
but can *derive* it when you need it.

5. Find an equation of the tangent line to the curve $y = \frac{e^x}{1+x^2}$ at the point $(1, \frac{1}{2}e)$.