Activity on the Derivative at a Point   Name_____
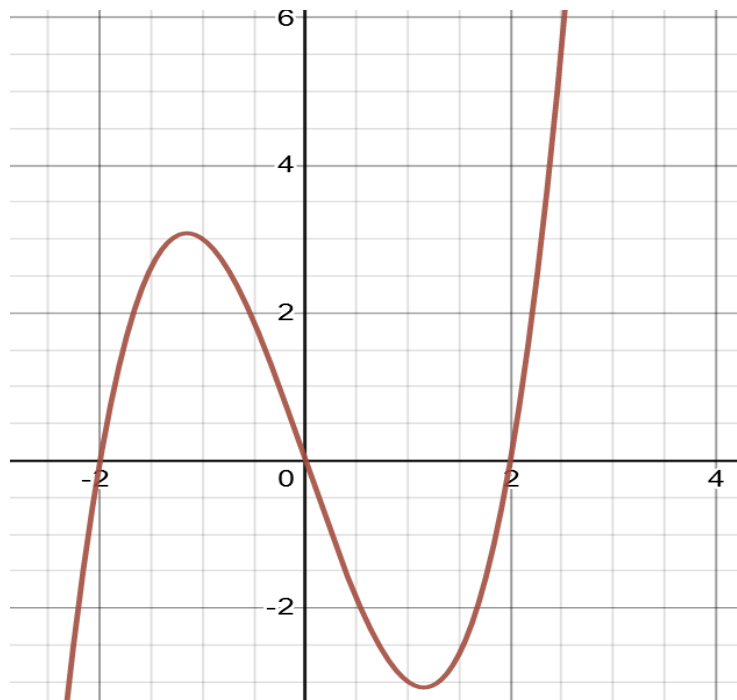
1. Given that f is represented by the following table
   i.   Estimate $f'(0)$ using forward difference quotients.

   ii. Estimate $f'(2)$ using forward difference quotients.

   iii. If $f'(x) = 0$, what is our best guess for the value(s) of x?

x	0	2	4	6
$f(x)$	4	0	6	6

2. Given that f is represented by the following graph:
   i.   Estimate $f'(0)$

   ii. Estimate $f'(2)$

   iii. Estimate two values of x such that $f'(x) = 0$.

3. Given that $f(x) = 3x - 2$, and we want the derivative at $x = 1$,
   - *i.* Find the derivative graphically and numerically using Desmos taking a screen shot: *https://www.desmos.com/calculator/kak2bzhnkq.*

   - ii. Find the derivative using the algebraic definition.

4. Given that $f(x) = 2x^2$, and we want the derivative at $x = 2$,
   - *i.* Find the derivative graphically and numerically using Desmos taking a screen shot: *https://www.desmos.com/calculator/kak2bzhnkq.*

   - ii. Find the derivative using the algebraic definition.

5. Given that $f(x) = x^3$, and we want the derivative at $x = 1$,
   - *i.* Find the derivative graphically and numerically using Desmos taking a screen shot: *https://www.desmos.com/calculator/kak2bzhnkq.*

   - ii. Find the derivative using the algebraic definition.

6. Given that $f(x) = x^2 + 2x$, and we want the derivative at $x = 2$,
   - *i.* Find the derivative graphically and numerically using Desmos taking a screen shot: *https://www.desmos.com/calculator/kak2bzhnkq.*

   - ii. Find the derivative using the algebraic definition.