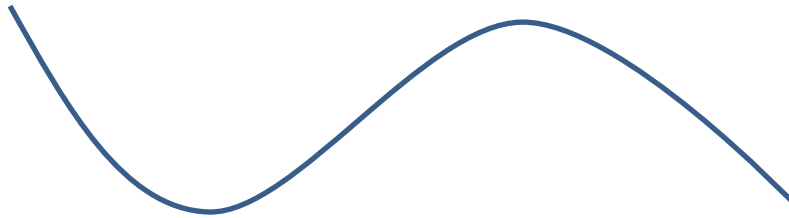


Ten Minute Calculus Review with a wire & straw.



Answer the following questions quickly after getting in groups of two or three. Bend your wire as shown above and use your straw if necessary.

Which derivative would you use (or both) in each cases 1-6 below:

1. Tells the concavity of an interval. (sad or smiling face)
2. Finds inflection point(s) (if any).
3. Finds if a relative extrema is a minimum or a maximum. A concave upward (region would cause a what? min/max value)
4. $f'(x) > 0$ or $f'(x) < 0$ or $f'(x) = 0$?
5. Finds the relative extrema? (why are they not absolute extrema?)
6. Optimization 1 (Helps finds the absolute extrema) On the exam $\pm 1/3$ [1,2]

-
- $f'(x) = 0$ hold straw at places on wire.
 - Point out $f''(x) < 0$ and whether max/min & $f''(x) > 0$ and whether max/min and $f''(x) = 0$ (hold that spot and flip with 180 degrees about x & y axis)
 - Hold straw so it is parallel to the line $y = 3$...so parallel to $x = \pm 2$.
 - Hold straw tangent to points on wire where $f'(x) < 0$ then where $f'(x) > 0$.
 - For $f(x) = (x - 3) / (x + 2)$. Hold straw parallel to the asymptote that would cause the denominator to be zero. Then hold straw that would be parallel to the asymptote that would be the lim as x approaches $\pm \infty$. (What are the equations of each of the asymptotes?)

