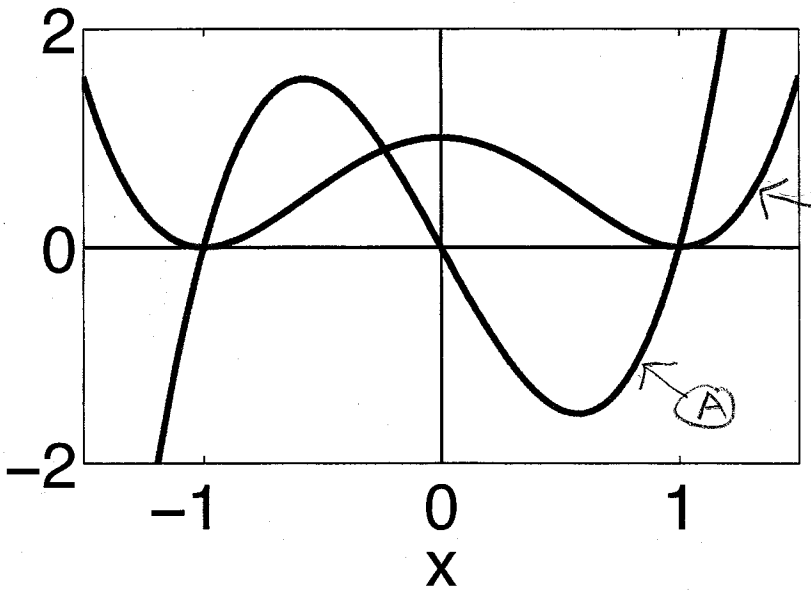
MA 131 - Connecting Derivatives and Graphs
February 7

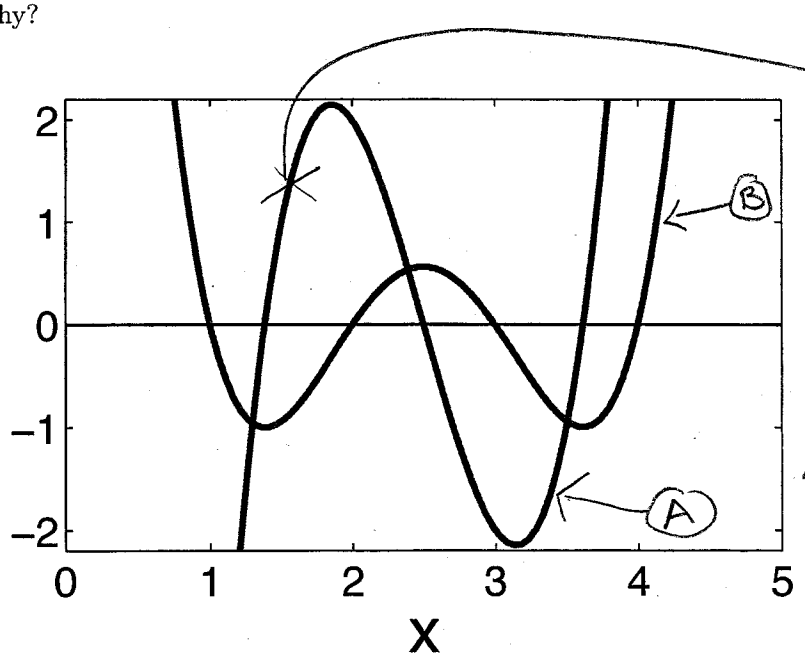
1. The following figure shows the graph of two different functions. Which function is the derivative of the other function? Why?



A is derivative of B

When A is decreasing, B is positive so B cant be derivative of A

2. The following figure shows the graph of two different functions. Which function is the derivative of the other function? Why?



Around x = 1.5 A is increasing so it's derivative is positive. B is negative so it cannot be derivative of A.

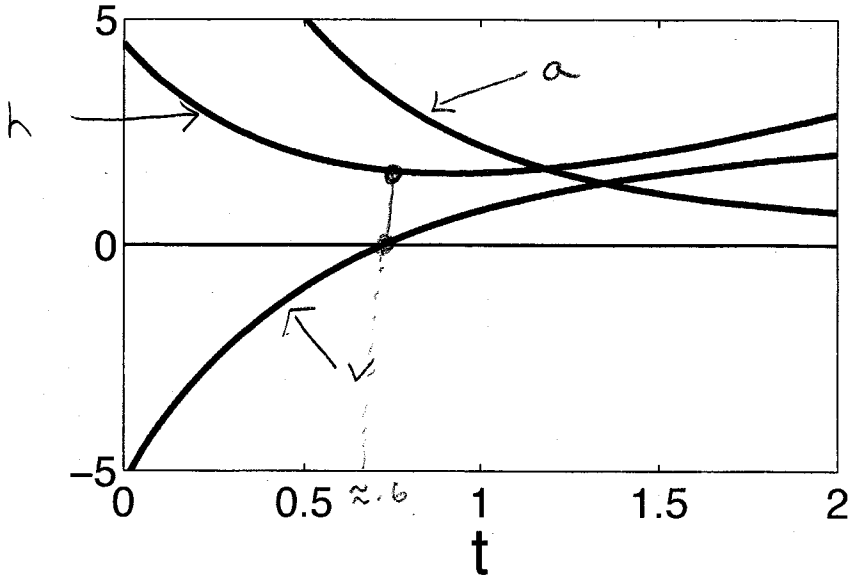
A is derivative of B

3. You throw a ball of the top of SAS, but the ball is connected to a rubber bungee cord. The figure below shows three functions: the height, velocity, and acceleration of the ball as a function of time.

- Which curve is the height? The velocity? The acceleration?
- Approximately how fast is the ball moving when $t = 1$? $\approx$ 1

- When is the velocity of the ball at time 0? ≈ -5
- For what times is the ball moving towards the ground? Away from the ground?

Toward Ground: $t < .6$
Away from Ground: $t > .6$



4. The figure below shows 2 curves: one is the population of rabbits in a forest, and the other is the rate of increase of the rabbit population.

- Which curve is which?
- When is the rabbit population increasing the fastest? When derivative is maximal: $t \approx .6$
- When is the rabbit population decreasing? Never
- As time goes on and on, what value does the population of rabbits level off to? ≈ 1000