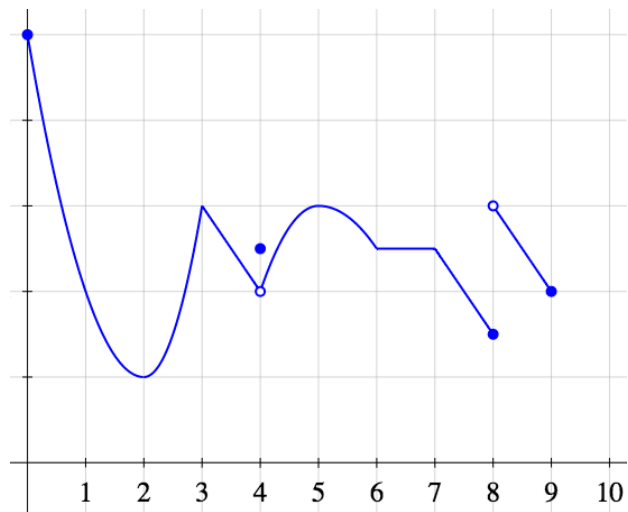


- Assignment #4 due on November 26
- Test 2 opens on December 4
- Assignment #5 due on December 20
  
- TODAY: Local extrema
  
- FRIDAY: Rolle's Theorem (Videos 5.5, 5.6)
- MONDAY: MVT (Videos 5.7, 5.8, 5.9)

## Definition of local extremum

Find local and global extrema of the function with this graph:



## Where is the maximum?

We know the following about the function  $h$ :

- The domain of  $h$  is  $(-4, 4)$ .
- $h$  is continuous on its domain.
- $h$  is differentiable on its domain, except at 0.
- $h'(x) = 0 \iff x = -1$  or  $1$ .

What can you conclude about the maximum of  $h$ ?

1.  $h$  has a maximum at  $x = -1$ , or  $1$ .
2.  $h$  has a maximum at  $x = -1, 0$ , or  $1$ .
3.  $h$  has a maximum at  $x = -4, -1, 0, 1$ , or  $4$ .
4. None of the above.

## Fractional exponents

Let  $g(x) = x^{2/3}(x - 1)^3$ .

Find local and global extrema of  $g$  on  $[-1, 2]$ .

## Computations - Inverse trig functions

Compute the derivatives of these functions, and simplify them as much as possible:

1.  $f(x) = \arcsin(x^{3/2})$

2.  $f(x) = 2x^2 \arctan(x^2) - \ln(x^4 + 1)$