

Let  $f(x) = x^3 - 4x^2 - 3x + 5$

1. Find  $f'(x) = 3x^2 - 8x - 3$   
 $= (3x + 1)(x - 3)$

2. What are the critical values?  $CV: -\frac{1}{3}, 3$

3. Find  $f''(x) = 6x - 8$   
 $f''(-\frac{1}{3}) = -10$   $\curvearrowright$  max  
 $f''(3) = 10$   $\curvearrowleft$  min

4. At what x-coordinate does the relative minimum occur?  $x = 3$

5. At what x-coordinate does the relative maximum occur?  $x = -\frac{1}{3}$

6. On the closed interval  $[0, 4]$ , at what x-coordinate does the absolute maximum occur?  
 $x = 0$

7. On the interval  $(-\infty, \infty)$ , do we have any absolute extrema? **NO**

8. Find the point of inflection - x- and y-coordinates. **See #3**  
 $6x - 8 = 0 \Rightarrow x = \frac{8}{6} = \frac{4}{3}$   $(\frac{4}{3}, -\frac{101}{27})$

