

Find all the extrema and points of inflection for

$$f(x) = x^{4/3} + x^{1/3}$$

May 25-3:10 PM

**Key**

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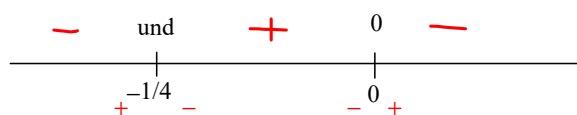
$$f(x) = x^{4/3} + x^{1/3}$$

$$f'(x) = \frac{4}{3}x^{1/3} + \frac{1}{3}x^{-2/3} = \frac{1}{3}x^{1/3}(4 + x^{-1})$$

$$x^{1/3} = 0 ; (4 + x^{-1}) = 0$$

$$x = 0 ; x = -\frac{1}{4}$$

**Key**



local max: 0  
local min: -1/4

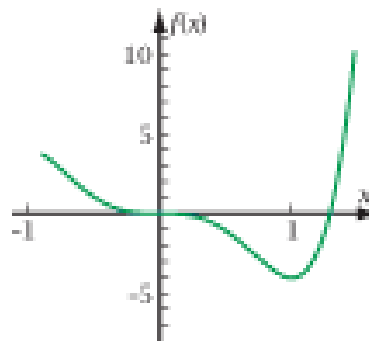
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8-2 Critical Points & Points of Inflection

Let  $f(x) = 6x^5 - 10x^3$

- a. Use derivatives to find the x-coordinates for all critical points of  $f$  and  $f'$ .
- b. Explain why there are critical points in part a that do not show up on this graph.
- c. Explain why there is no maximum or minimum point at  $x = 0$ , even though  $f'(0)$  equals zero.



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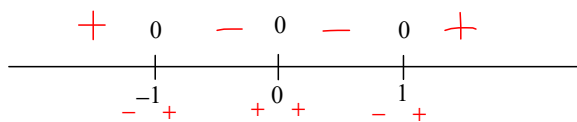
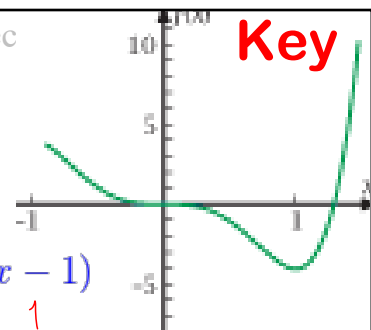
**Key**

8-2 Critical Points & Points of Inflec

Let  $f(x) = 6x^5 - 10x^3$

$$f'(x) = 30x^4 - 10x^3 = 30x^2(x^2 - 1) = 30x^2(x + 1)(x - 1)$$

0
-1
1



local max: -1  
 local min: 1  
 plateau: 0

**Key**

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