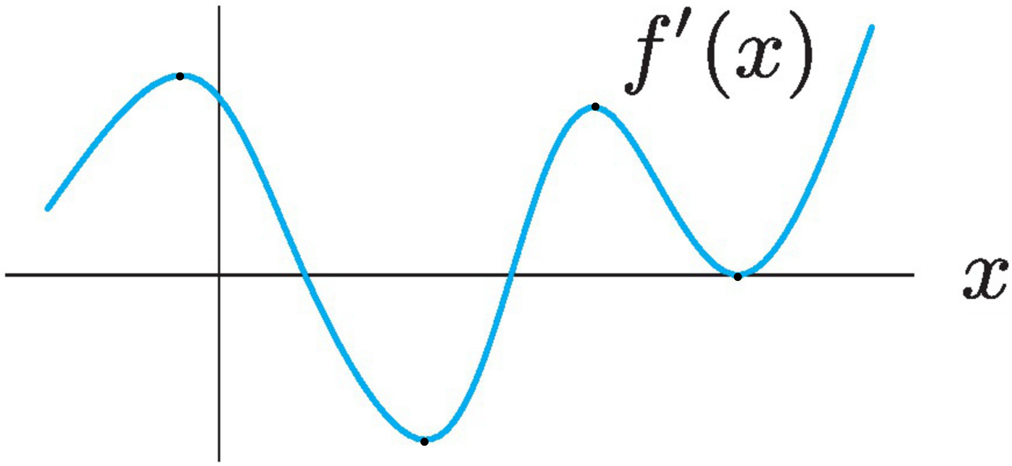
Name:
Section 4.2
Math 151

1. Indicate on the graph of the derivative, f' the $x-$values that are inflection points of the function f.



To find inflection points of f we need to identify points where $f''(x)$ changes sign. Howvever, because f'' is the derivative of f' (the given graph), any point where f'' changes sign will be a local max or min on the graph of f'.

2. Find the inflection points of $f(x) = x^4 + x^3 - 3x^2 + 2$.

To find the inflection points we need

$$f''(x) = 0 \text{ AND} f''(x) \text{ changes sign.}$$

Finding the derivatives

$$f'(x) = 4x^3 + 3x^2 - 6x \Longrightarrow f''(x) = 12x^2 + 6x - 6$$

and

$$f''(x) = 0 \Longrightarrow 12x^2 + 6x - 6 \Longrightarrow 6(x+1)(2x-1) = 0$$

so $x = -1, \frac{1}{2}$ are possible inflection points. We still need to check that $f''(x)$ changes sign at these points. For that plug in values to the left and right of each point and confirm the sign change.