

1. Find the absolute maximum and the absolute minimum for the function  $y = 2x^4 - 12x^3 + 220$  on the interval  $[1, 5]$ . If one doesn't exist, then be sure to None.

$$y' = 8x^3 - 36x^2 = 4x^2(2x - 9)$$

The critical values are  $x = 0$  and  $x = 4.5$ . Since the interval is  $[1, 5]$ , don't use the critical value of  $x = 0$ . Now test  $x = 4.5, 1$ , and  $5$

$$x = 1 \quad y = 210$$

$$x = 5 \quad y = -30$$

$$x = 4.5 \quad y = -53.375$$

Absolute Max: 210

Absolute Min:  $-53.375$

2. If  $x = 2$  is a critical value for the function  $f(x)$  and  $f''(2) = 20$ , classify the critical value as a local maximum, local minimum or neither. If it can not be determined, then tell what additional information is needed.

the critical values is a local min.