

5.1/5.3. Analysis of Curves

Section 5.3 Exercises, pg. 220

 $3^{1,2,3}$, $5^{1,2,3}$, 7^4 , $19^{4,5,6}$, $20^{4,6}$, 41, 42

Supplementary Problems

1*5.1/5.3. Absolute and Relative Extrema*

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1, 3, 5, $11^{2,3,7}$, $21^{2,3}$, $29^{1,2,3,8}$, $30^{1,2,3}$, 31^9 *5.3. Using f' and f'' to Sketch f*

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45, 49

Notes:

1. Include a sketch of $y = y(x)$.
2. Also use the second derivative test.
3. Find the (x, y) coordinates of any extrema.
4. Find the (x, y) coordinates of any inflection points.
5. *Hint:* factor the numerator of y'' .
6. Evaluate y'' at neighboring values to ensure that y'' switches signs at the inflection points.
7. Justify all answers with values of $f(x)$, $f'(x)$ and/or $f''(x)$.
8. Note that this is the same function as in Section 5.3 Exercises, problem 20.
9. Solve by graphing the function. Include the graph.

Supplementary Problems:**1)** For

$$f(x) = \begin{cases} x^2 - 4x + 6 & , \quad 0 \leq x \leq 3 \\ x^2 - 10x + 24 & , \quad 3 < x \leq 6 \end{cases},$$

- a) calculate $f'(x)$ and $f''(x)$
- b) find the (x, y) coordinates of all relative and absolute extrema.

Justify all answers in terms of values of $f(x)$, $f'(x)$ and/or $f''(x)$. Do not graph $f(x)$.