

3B.6. Describing Functions

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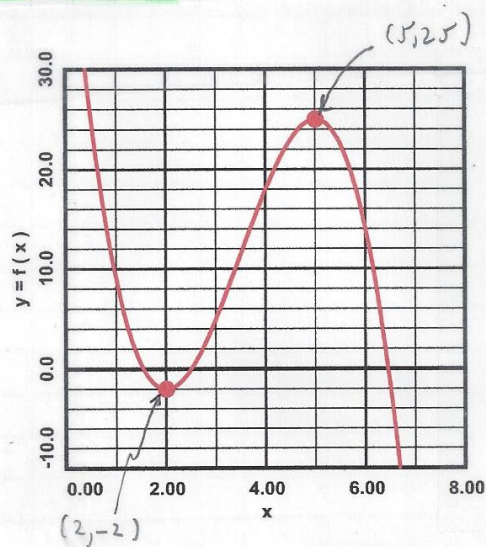
For Examples #1 & #2:

- Graph $y=f(x)$ with the indicated calculator window.
- Use your calculator to find the coordinates of the relative maxima and minima of $y=f(x)$. Graph the maxima and minima points on $y=f(x)$.
- State the portions of the domain where $y=f(x)$ is increasing and decreasing.

Example #1. Window: $0 \leq x \leq 8$, $-10 \leq y \leq 30$

$$y=f(x) = -2x^3 + 21x^2 - 60x + 50$$

Solution:



inc.: $2 < x < 5$

dec.: $-\infty < x < 2$ and $5 < x < \infty$

Example #2. Window: $0 \leq x \leq 6$, $-40 \leq y \leq 40$

$$y=f(x) = 3x^4 - 36x^3 + 138x^2 - 180x + 40$$

Solution:

inc.: $1 < x < 3$ and $5 < x < \infty$

dec.: $-\infty < x < 1$ and $3 < x < 5$

