Finding Increasing/Decreasing Intervals

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To find the intervals where $f(x)$ is increasing or decreasing:
1) Find the critical #'s.
2) Set up test intervals on a # line.
3) Find the sign of $f'(x)$ for each interval.
4) If $f'(x) > 0$, then $f(x)$ is increasing (use arrow).
If $f'(x) < 0$, then $f(x)$ is decreasing (use arrow).

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1. Find the intervals on which the function is increasing or decreasing for $f(x) = x^3 - \frac{3}{2}x^2$. Justify.

**2. The function f is given by $f(x) = x^4 + x^2 - 2$. On which intervals is f increasing?

**3. Where are all the values of x for which the function defined by $f(x) = (x^2 - 3)e^{-x}$ is increasing?

4. Identify the intervals on which $f(x) = (x - 2)^{2/3}$ is increasing or decreasing. Justify your answer.