

- Make sure you attend the exercise class that you have been assigned to!
 - The instructor will present the starred problem in class.
 - You should then work on the other problems on your own.
 - The instructor and helper will be available for questions.
 - Solutions will be available online after the exercise class took place.
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Strategy for Graphing $y = f(x)$

1. Identify the domain of f and any symmetries the curve may have.
2. Find y' and y'' .
3. Find the critical points of f , and identify the function's behavior at each one.
4. Find where the curve is increasing and where it is decreasing.
5. Find the points of inflection, if any occur, and determine the concavity of the curve.
6. Identify any asymptotes.
7. Plot key points, such as the intercepts and the points found in Steps 3–5, and sketch the curve.

(*)1. **Curve sketching.**

[2007 exam question]

Sketch the graph of

$$f(x) = \frac{12}{3 + x^2}$$

by following step by step the strategy for graphing given above.

2. **Curve sketching.**

[2008 exam question]

Sketch the graph of

$$f(x) = \frac{x}{1 + x^2}$$

by following step by step the strategy for graphing given above.

Extra: The sum of two non-negative numbers is 20. Find the numbers if the product of one number and the square root of the other is to be as large as possible.