

Quiz 7

Math 251

Name:

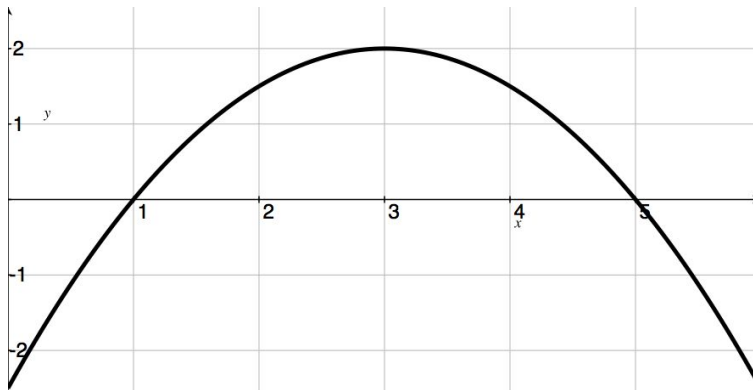
1. [2] TRUE/FALSE: Circle T in each of the following cases if the statement is *always* true. Otherwise, circle F. Let f'' be a continuous function defined on $(-\infty, \infty)$.

T F If $f'(2) = 0$ and $f''(2) = -5$, then f has a local maximum when $x = 2$.

T F If $f'(6) = 0$ and $f''(6) = 0$, then f will not have a local extrema at $x = 6$.

Show your work for the following problems. The correct answer with no supporting work will receive NO credit (this includes multiple choice questions).

2. [2] The graph of the *derivative* f' of a function f is shown.



(a) On what interval/s is f increasing?

(b) At what value/s of x does f have a local minimum?

3. [6] Consider the function $f(x) = \frac{x^2}{x^2-1}$.

(a) *Justify* the existence or nonexistence of any vertical asymptotes.

(b) *Justify* the existence or nonexistence of any horizontal asymptotes.

(c) Find the intervals when f is increasing.

(d) Find the intervals when f is concave up.

(e) Using the above information you found above, sketch the graph of f . (You need not run through all the steps covered in §4.5! You only need to sketch a graph that is consistent with the information you found above.)

