Math 141 Group Quiz 4

Names: _____

1. Do all this stuff to $f(x) = \dfrac{(1-x)^2}{1+x^2}$:

a. Find where $f(x) = 0$.

b. Where is $f(x)$ increasing and decreasing?

c. Where is $f(x)$ concave up and concave down?

d. Graph $f(x)$.

2. Draw one function $f(x)$ such that:

a. $f(x)$ is continuous on $[-4, 4]$.

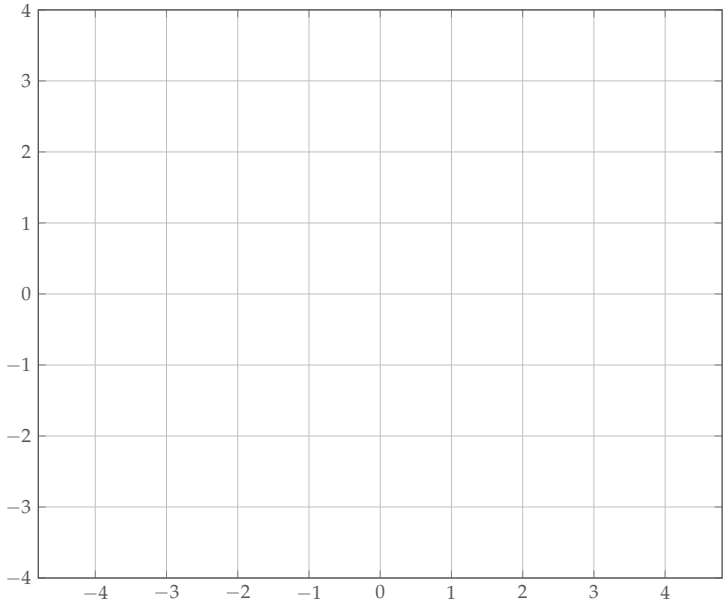
b. $f''(x) > 0$ for all x in $(-2, 1)$.

c. $f(x)$ has critical points at -2, 0, and 1.

d. $f(x)$ does not have a local max at 0.

e. The Mean Value Theorem does not apply.

f. $f'(x) < 0$ for all x in $(2, 4)$.



3. Apply the Mean Value Theorem to $\sin t$ on $[0, x]$ and use that statement to prove that $\sin x \leq x$ is true for all positive x.