MATHEMATICS: QUIZ – Curve Sketching

Instructions:	Answer the question below. Submit your work to Eric (in IBLC 261) before class starts on Wednesday, Nov 18. Indicate subject (mathematics), assignment number, name and student ID# at the top of the front page. Multiple pages should be stapled; no folded-corner tricks, no paper clips.
Due:	Before 10:00 am, Wednesday, Nov 18.

Let $f(x) = \dfrac{x}{1+x^2}$.

1. Identify intervals on which f is increasing, decreasing, concave up, concave down and identify any minima, maxima and inflection points of f.

2. Sketch f. Note: each axis must be labeled and must have at least one point indicated to provide a scale.

3. For which values of c is the function $g(x) = \dfrac{x}{1+x^2} + cx$ increasing everywhere on the real line?