MATH 101 QUIZ 2

Student ID:
Name:

1. Find constants a and b which make the following function continuous.

$$f(x) = \begin{cases} ax + b & \text{if } x \leq 0 \\ x^2 + 2a - b & \text{if } 0 < x \leq 2 \\ bx + 2a & \text{if } x > 2. \end{cases}$$

2. Find the horizontal asymptotes of the function $f(x) = \sqrt{4x^2 + 7x} - 2x$.

3. (1) Diiferentiate the function $f(x) = \frac{1}{x^2+1}$.

(2) Find all the tangent lines of $f(x) = \frac{1}{x^2+1}$ whose x-intercepts are 2.