

Name \_\_\_\_\_

Student Number \_\_\_\_\_

**Show all work. Write neatly. Label your answers clearly.**

1. Let  $f(x) = 2x^2 + 6x - 1$ . Find and simplify  $\frac{f(x+h)-f(x)}{h}$ .

2. Audrey's house is 400 feet West and 300 feet North of Andy's house. In between their houses is a big open field.

(a) Andy leaves his house and starts running West at 6 feet per second. At some point, he stops running and starts walking at 2 feet per second, cutting directly across the field to Audrey's house. Find a function which gives the time it takes for Andy to reach Audrey's house in terms of the distance  $x$  which Andy runs.

(b) Suppose instead that Andy and Audrey leave their homes at the same instant and walk directly toward each other. Andy walks at 2 feet per second and Audrey walks at 3 feet per second. Find a function giving the distance between them in terms of time.

(c) In the situation in part (b), when do Andy and Audrey meet?