

Math 120
5 October 2000
Quiz #2 (20 points)

Name _____

TA: _____

Instructions: You have 25 minutes for this quiz. You **MUST** show work for credit. No credit for answers only. If in doubt, ask for clarification. **NO GRAPHING CALCULATORS ALLOWED.** Use 2 decimal places of accuracy.

1. (7pts) Use the function $y = f(x) = 2x^2 - x + 1$ to answer these two questions:
- (a) (6pts) Simplify this expression so there is no “ h ” in the denominator:

$$\frac{f(x+h) - f(x)}{h} =$$

- (b) (1pts) If you plug $h = 0$ in the final simplified expression in (a), what do you get?

2. (7pts) The internet company *HELLO.com* has offered you a job. Their offer states: your initial salary will be \$50000 a year, your salary after 1 year will be \$57000 and the salary increases according to a linear model. A rival company, *BOZO.com*, has offered you a job for an annual salary of $y = \$22000 + 12000x$ after x years.

(a) (2pts) What is the linear equation for the *HELLO.com* salary?

(b) (5pts) When (if ever) will the *BOZO.com* salary exceed the *HELLO.com* salary by at least \$10000?

3. (6pts) Let ℓ be the line with equation $y = \frac{1}{2}x + 1$. Find the point on ℓ that is closest to the point $(2, 0)$. You must also draw an accurate picture of the situation.