Math 120   Name _____
30 November 2000   Section _____
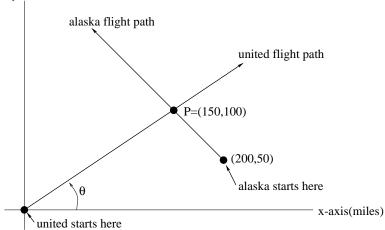Quiz #8 (20 points)   TA:_____

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. (17pts)The flight paths of two airplanes are pictured below. The UNITED plane begins at the origin of the coordinate system and has parametric equations given by $U(t) = (300t, 200t)$; the time units on t will be "hours" and the units on the axes of the coordinate system are "miles". The ALASKA jet begins at the location $(200,50)$ and reaches the position $(150, 100)$ in 15 minutes. Answer the questions below and on the next page about this situation.

(a) (2pts) What is the speed of the UNITED plane along its flight path?

(b) (2pts) When will the UNITED plane reach the position P?

(c) (2pts) What is the angle θ?

(d) (6pts) What are the parametric equations for the ALASKA jet?

(e) (2pts) Find the formula for a function $y = d(t)$ that calculates the distance between the UNITED jet and the ALASKA jet at time t.

(f) (3pts) WHEN will the two planes be closest together?

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2. (3pts) Assume $y = f(x) = 13^x$ and B, C are non-zero constants. Put

$$y = (1/3)f(B(x - C))$$

into standard exponential form $y = Ab^x$; you MUST box your answers for A and b.