Name _____

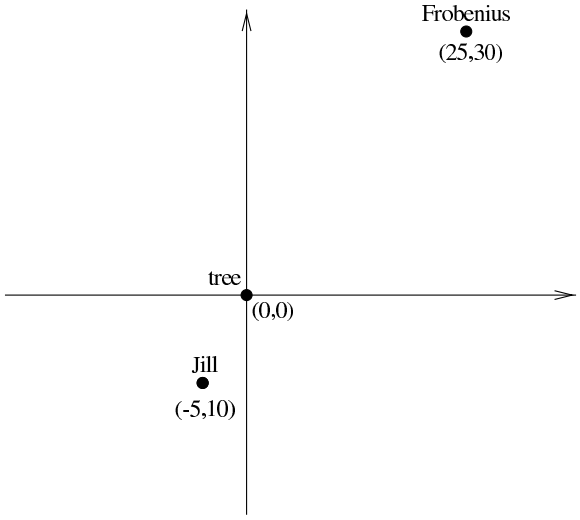
Math 120 (QUIZ 2, October 9, 1997)

Instructions: You have 25 minutes for this quiz. **Show your work; no credit for answers only.**

1. (2 points) Which values of t make the following equation true?

$$2yt^2 - 11 = xt$$

2. (8 points total) Early one morning, Jill takes her dog Frobenius to the off-leash area at Magnusson Park. In the middle of the off-leash area is a large oak tree. At exactly 6:30am, Jill stands 10 feet south and 5 ft west of the tree. Frobenius is 25 ft east and 30 feet north of the tree, and he is running towards Jill at a constant speed of 10 ft/sec.



(a) (2 pts) Impose a coordinate system with the tree at the origin, as in the picture. Find the equation of the line modeling Frobenius's path.

(b) (2 pts) Let $d(t)$ be the distance from Jill to Frobenius, t seconds after 6:30am. What is the physical meaning of the mathematical statement $d(1) = 40$? (Write down a complete English sentence to answer this question.)

(c) (2 pts) Find the equation for $d(t)$.

(d) (2 pts) What is the shortest distance between Frobenius and the tree, as he runs toward Jill?