Math 120 D **Diagnostic Quiz 0** (25 minutes) Tuesday, September 30, 1997

Name _____ **Student number** _____ **Quiz section:** _____

1. (a) Simplify $(x^4 + 2x)x^3$ and $1/\sqrt{\frac{\pi^4 y^2}{4}}$. (b) Solve the equation $\frac{x+3}{2x+1} = 4$.

2. A circle has area equal to 2. Find its circumference.

3. A rectangle with width w and length l has perimeter equal to 10. Find an equation relating w and l.

4. A plane takes off from SeaTac airport, which is about 15 miles south of downtown Seattle. The plane flies northward at constant speed and reaches downtown Seattle after 10 minutes. What is the speed of the plane? What is the distance between the plane and downtown Seattle t minutes after the plane takes off, where $0 \leq t \leq 10$? [Your answer should be a formula in terms of t.]

5. For the square figure shown, find an equation relating the lengths x and y. Also, find an equation relating x and the angle θ.

[Useful facts: A circle of radius r has area πr^2 and circumference $2\pi r$. For any right triangle as shown, $c^2 = a^2 + b^2$, $\sin(\theta) = \frac{b}{c}$, $\cos(\theta) = \frac{a}{c}$, $\tan(\theta) = \frac{b}{a}$.]

6. Do you like math?