Homework 6
Trigonometry Continued: $tan(\alpha)$ and Trigonometric Identities

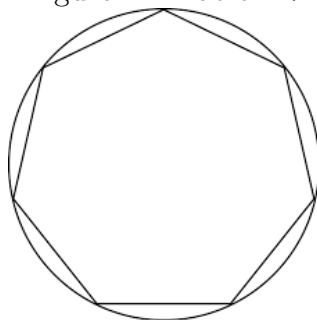## Math 7a

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In this homework, you can use a calculator to compute sin and cos of angles.

1. For which values of angle α from $0°$ to $360°$ is $\tan(\alpha)$ undefined?

2. A ball is kicked into the air at an angle of $30°$ to the horizontal with an initial velocity of 25 m/s. Find both the vertical and horizontal components of the velocity vector.

Figure 1: Problem 7

3. The area of a right triangle is 36 square meters. The legs of the triangle have the ratio of 2:9. Find the hypotenuse of the triangle.

4. A right triangle $\triangle ABC$ is positioned such that A is at the origin, B is in the 1st quadrant ($B_x > 0$ and $B_y > 0$) and C is on the positive horizontal axis ($C_x > 0$ and $C_y = 0$). If length of side AB is 1, and AB makes a $35°$ angle with positive x axis, what are the coordinates of B?

5. Consider a parallelogram $ABCD$ with $AB = 10$, $AD = 4$ and $\angle BAD = 50°$. Find the length of diagonal AC.

6. If the diagonal of a 17 inch laptop screen makes a $35°$ angle with the horizontal, what is the perimeter of the screen?

7. A regular heptagon is incribed into a circle of radius 1.

    (a) What is the perimeter of the heptagon?

    (b) what is the area of the heptagon?