EXAM 1 - MATH 131

Thursday, September 22

YOUR NAME:_____

George Voutsadakis

Read each problem **very carefully** before starting to solve it. Each problem is worth 10 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. Find the length of the arc subtended by an angle of $120°$ on a circle of radius $r = 5$ inches.

2. Find the exact value of $\sin 30° \cos 60° + \tan^2 45°$.

3. Suppose $\sin\theta = -\frac{5}{7}$ and $\tan\theta > 0$. Find the exact values of $\sec\theta$ and $\cot\theta$.

4. Consider the function $f(x) = \cos x$. Please answer the following questions carefully:

   (a) What is the domain of f?

   (b) What is the range of f?

   (c) What type of symmetry does f have?

   (d) What is the period of f?

   (e) Create a small table of values for the "easy" angles for $y = f(x)$ and graph $y = f(x)$ in one period.

5. A pilot of a small commercial airplane is flying at a steady height and approaching the Kinross airport. The pilot measures the angle of depression to the airport and finds it to be $45°$. After having traveled 1000 m, he measures the angle of depression to the airport again and finds it to be $60°$. How high is the pilot flying?