EXAM 3 - MATH 140

DATE: Wednesday, March 16
INSTRUCTOR: George Voutsadakis

Read each problem very carefully before starting to solve it. Each question is worth 3 points. It is necessary to show your work. Correct answers without explanations are worth 0 points.

GOOD LUCK!!

1. Find the domain and the formula for $g \circ f$ if $f(x) = \frac{x}{x-3}$ and $g(x) = \log_7(x-5)$.

2. Find the domain and use your basic knowledge of logarithmic graphs and your graphing techniques to sketch the graph of

$$f(x) = -\log_{1/3}(x+1) - 2.$$

State clearly all transformations used and label all points used.

3. Solve the equations

   (a) $5^{2x} + 3 \cdot 5^x - 4 = 0$

   (b) $\log_{16} x + \log_4 x + \log_2 x = 3$.

4. If the point $(-1, 4)$ is on the terminal side of the angle θ in the standard position, find $\sin\theta$ and $\sec\theta$.

5. If $\cos\theta = -\frac{4}{7}$ and $\sin\theta < 0$, find $\csc\theta$ and $\cot\theta$.

6. Graph in one period of your choice the sinusoidal wave $f(x) = -3\cos(4\pi x)$