PRACTICE 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 $f(x) = \frac{x}{x-1}$ and $g(x) = \sqrt{x-2}$.

2. Find the domain, the inverse $f^{-1}(x)$ and the range of $f(x) = \frac{5x-1}{3x+2}$.

3. Use your basic knowledge of exponential graphs and your graphing techniques to sketch the graph of $f(x) = 3 - 2^{x+1}$. State clearly all transformations used and label all points used.

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

$$f(x) = -\log_2(1-x) + 1.$$

   State all transformations used clearly and label all points used.

5. Solve the equations

   (a) $e^{x^2} = (e^{3x})\frac{1}{e^2}$

   (b) $\log_2(3x+2) - \log_4 x = 3$.

6. If $\sin\theta = \frac{2}{5}$ and θ has its terminal side in the second quadrant, find $\sec\theta$ and $\tan\theta$.