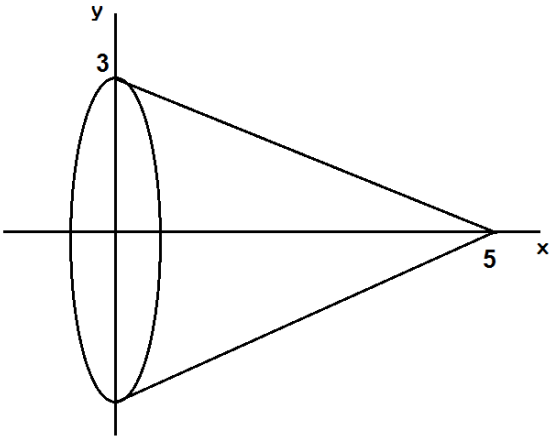
EXAM 3 - MATH 152 Friday, November 6

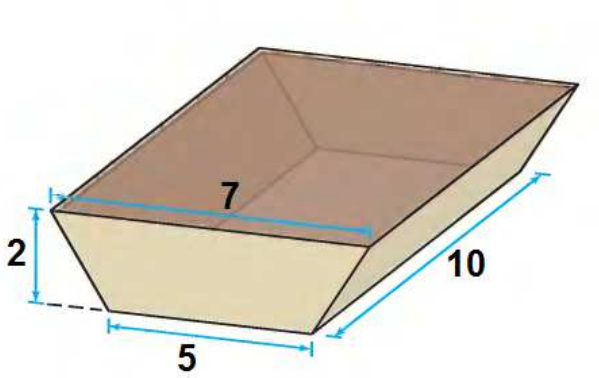
YOUR NAME:_____ George Voutsadakis

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 surface area of the right circular cone shown in the figure using the fact that it is a solid of revolution.



2. The trough shown is filled with liquid of density ρ. Use integration to calculate the force due to pressure on the front side of the trough.



3. Find the centroid of the region lying underneath the graph of the function $f(x) = \ln x$ over the interval $[1, 2]$.

4. Solve the initial value problem $yy' = xe^{-y^2}$, $y(0) = -2$.

5. Solve the initial value problem $y' + 2y = 1 + e^{-x}$, $y(0) = -4$.