Math 132 - Homework 2

February 17, 2021

Name _____

Score _____

The following problems are from the suggested homework. Show all work to receive full credit. Supply explanations when necessary. This assignment is due on February 24.

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1. (2 points) A rectangular dam is 40 feet high and 60 feet wide. Using $62.4\,\mathrm{lb/ft^3}$ as the weight density of the water, compute the total force on the dam when

   (a) the surface of the water is at the top of the dam.

   (b) the surface of the water is halfway down the dam.

2. (2 points) Use the definition of $\cosh(x)$ in terms of exponential functions to prove that $\displaystyle\int \cosh(x)\,dx = \sinh(x) + C$.

Turn over.

3. (2 points) Integrate: $\displaystyle\int x^2 e^{-x^3}\, dx$

4. (2 points) Integrate: $\displaystyle\int \tan^{-1} x\, dx$

5. (2 points) Integrate: $\displaystyle\int x^2 \cos x\, dx$