EXAM 4 - MATH 112   Friday, April 16

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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. Compute the following integrals:

   (a) $\int (8x^3 - 3x^2 + 2)dx$

   (b) $\int (6\sqrt{x} + \frac{1}{\sqrt[3]{x}})dx$

   (c) $\int \frac{4x^3 + xe^{5x} - 3}{x}dx$

2. An ice cube tray is filled with tap water, having temperature 70 degrees Fahrenheit, and placed in the freezer. Its temperature is changing at the rate of $-12e^{-0.2t}$ degrees per hour after t hours. Find a formula for the temperature $f(t)$ of the water after it has stayed in the freezer for t hours.

3. Find the area of the region trapped between the graphs of the functions $f(x) = 4x^3$ and $g(x) = 12x^2$.

4. Compute the integrals:

(a) $\int (x^4 - 1)(x^5 - 5x)^6 \, dx$

(b) $\int x^2 e^{x^3+7} \, dx$

5. Compute the integral

$$\int x^6 \ln x dx.$$