

Name: _____

MA2 Exam 4 Review Sheet

Exam 4 will be on Wednesday, May 23, 2007. All problems must be answered using calculus techniques. Final answers must be *exact* (not rounded), *in simplest form*, and include appropriate *units* unless otherwise indicated. Express answers using *positive exponents only*. Put a box around your final answer. Graphing calculators, though not required, may be used on the exam, with the following exceptions: TI-89, TI-92, or any calculator with symbolic manipulation abilities.

In problems 1 through 8, compute each definite integral:

1. $\int_{-3}^1 (6x^2 - 5x + 2) dx$

2. $\int_0^8 \sqrt[3]{x} dx$

3. $\int_{-1}^2 \frac{3}{t^4} dt$

4. $\int_0^1 \frac{x^2}{x^3 + 4} dx$

5. $\int_0^1 e^{3x+2} dx$

6. $\int_0^3 \frac{x dx}{\sqrt{x^2 + 16}}$

7. $\int_0^{20} 6|x - 14| dx$

8. $\int_0^{\pi/2} \cos^2 x \sin x dx$

9. Evaluate $\int_0^7 g(x) dx$ if $g(x) = \begin{cases} x^2 & \text{if } x \leq 3 \\ 5x + 3 & \text{if } x > 3 \end{cases}$.

10. Find the area of the region bounded by the curves $y = x^2 + 2$ and $y = 27$.

11. Find the area of the region bounded by the curve $y = 3\cos x$ and the x -axis from $x = 0$ to $x = \frac{3\pi}{2}$.

12. Find the area of the region bounded by the curves $y = x - 1$ and $y^2 = 2x + 6$.