MATH 2414.002 Fall 2003 Skills Assessment 2.1 Name: key

Instructions: You may not use notes, books or calculators on this assessment. No partial credit. **Don't simplify answers**. Successful completion of this assessment is 8 of 10 completely correct. Good Luck!

1. Find $\int 2x^3 - 5x + 12\,dx$ $= \frac{2}{4}x^4 - \frac{5}{2}x^2 + 12x + C$

2. Find $\int (\cos x - e^x)\,dx$ $= \sin x - e^x + C$

3. Find $\int (\frac{1}{x} - \sin x)\,dx$ $= \ln|x| + \cos x + C$

4. Find $\int \sec^2 x\,dx$ $= \tan x + C$

5. Find $\int_{-2}^{1} (2x^3 + x)\,dx$ $= \frac{2}{4}x^4 + \frac{x^2}{2}\Big|_{-2}^{1} = (\frac{1}{2} + \frac{1}{2}) - (\frac{1}{2}16 + 2) = 1 - 10 = -9$

6. Find $\int_0^{\pi/2} (\cos x - 2)\,dx$ $= \sin x - 2x\Big|_0^{\pi/2} = (\sin\frac{\pi}{2} - \pi) - (\sin 0 - 0)$ $= 1 - \pi$

7. Find $\int_5^{25} \frac{1}{x}\,dx$ $\ln|x|\Big|_5^{25} = \ln 25 - \ln 5 = 2\ln 5 - \ln 5 = \ln 5$

8. Find $r(y)$ if $r'(y) = \sqrt{x} + 2$ $= x^{1/2} + 2$ $r(y) = \frac{2}{3}x^{3/2} + 2x + C$

9. Find g(t) if $g'(t) = \cos t$ and $g(0) = 5$ $g(t) = \sin t + C$ $g(0) = \sin 0 + C = 5$
$g(t) = \sin t + 5$ $\Rightarrow C = 5$

10. Find h(w) if $\frac{dh}{dw} = e^w$ and $h(\pi) = 2$ $h(w) = e^w + C$ $h(\pi) = e^\pi + C = 2$
$h(w) = e^w + (2 - e^\pi)$ $\Rightarrow C = 2 - e^\pi$