

Test Total

Name \_\_\_\_\_

Test 2 Calculus II 3450:222 Dr. Norfolk March 11th, 2003  
Show all of your work.

1. Evaluate  $\int_0^{\pi/2} x^2 \sin x \, dx$

12 points

2. Find the exact value of  $\int_0^{\pi/2} \sin^3 x \cos^{2/5} x \, dx$

12 points

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3. Evaluate  $\int \frac{dx}{\sqrt{x^2 - 6x}}$

14 points

4. Evaluate  $\int \frac{2x + 1}{x^4 - 1} dx$

14 points

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5. Evaluate  $\int \frac{e^x}{e^{x/2} + 4} dx$

12 points

6. Use an appropriate substitution and one of the following formulae to evaluate  $\int \sqrt{x}\sqrt{x+4} dx$

(a)  $\int \sqrt{u^2 + a^2} du = \frac{u}{2}\sqrt{u^2 + a^2} + \frac{a^2}{2} \ln(u + \sqrt{u^2 + a^2})$

(b)  $\int u\sqrt{u^2 + a^2} du = \frac{1}{3}(u^2 + a^2)^{3/2}$

(c)  $\int u^2\sqrt{u^2 + a^2} du = \frac{u}{8}(a^2 + 2u^2)\sqrt{u^2 + a^2} - \frac{a^4}{8} \ln(u + \sqrt{u^2 + a^2})$

12 points

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