Group: _____ _____ _____ Name: _____

Math 231 A. Worksheet 5.

These are problems from §7.4 (partial fractions) and §7.5 (strategy for integration).

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1. Use the method from the pre-class video to evaluate $\displaystyle\int \frac{2x+5}{x^2+4x+8}\,dx$.

2. Write out the form for the partial fraction expansion of $\dfrac{x^6+3x^2+1}{(x^2+4)^2(x-1)^3}$. Do not solve for the constants–leave them as A, B, C, etc..

3. Use the method of partial fractions to evaluate $\displaystyle\int \frac{2x^2-x+4}{(x^2+4)(x-1)}\,dx$.

4. Evaluate:

(a) $\displaystyle\int \frac{x}{x^4+2x^2+2}\,dx.$ Is there any reasonable choice of u for which du appears in the numerator?

(b) $\displaystyle\int \ln(x^2+1)\,dx.$ Is there an obvious substitution? If not, what can you do?

(c) $\displaystyle\int \frac{dx}{\sqrt{x}+x\sqrt{x}}.$

(d) $\displaystyle\int \frac{dx}{x+\sqrt[3]{x}}.$