

Review Problems

February 15, 2017

1. (Fall 2002, Exam 2, #3) Evaluate $\int_1^3 \frac{x+3}{x^2+3x+2} dx$.
2. (Fall 2002, Exam 2, #4) Evaluate $\int_3^4 x\sqrt{3-x} dx$.
3. (Fall 2007, Exam 2, #4) The substitution best suited for computing the integral $\int \frac{dx}{\sqrt{1+4x-x^2}}$ is
 - a $x = 2 + \sqrt{5} \sin \theta$
 - b $x = 3 \sin \theta$
 - c $x = 3 + \sin \theta$
 - d $x = 2 + \sqrt{5} \sec \theta$
 - e $x = 5 + \sqrt{2} \tan \theta$
4. (Fall 2007, Exam 2, #5) Evaluate $\int_4^5 \frac{dx}{x^2-5x+6}$.
5. What form does the partial fraction decomposition of $\frac{1}{(x^2-1)(x^2+4x+9)}$ have?
6. (Fall 2008, Exam 2, #1) Compute $\int_0^1 \frac{dx}{x^2+3x+2}$.
7. (Fall 2008, Exam 2, #2) Find the partial fraction decomposition of the function $\frac{2x-4}{x(x^2+4)}$.
8. (Fall 2008, Exam 2, #3) Which trigonometric integral arises when one computes $\int \frac{dx}{\sqrt{x^2+2x+5}}$?