

Review Problems

November 30, 2016

1. (Fall 2007, Final Exam, #19) Given $g(x) = \int_0^{x^2} \frac{u}{u^2 + 2} du$, find the value of $g'(2)$.

2. (Fall 2007, Final Exam, #20) Given $g(x) = \int_0^x \frac{u}{u^2 + 2} du$, find the value of $g(1)$.

Answer: (for now) $\int_0^1 \frac{u}{u^2 + 2} du$

3. (Fall 2008, Final Exam, #17) Evaluate $\int_0^1 (x^2 - \sqrt{x} + 1) dx$.

4. (Fall 2008, Final Exam, #18) Evaluate $\int_0^{\pi/2} \sin(2x) dx$.

5. (Fall 2008, Final Exam, #20) If $g(x) = \int_0^{2x} e^{t^2} dt$, then find $g'(x)$.

6. (Fall 2009, Final Exam, #16) Compute $\int_1^4 \left(\sqrt{x} - \frac{1}{\sqrt{x}} \right) dx$.

7. (Fall 2009, Final Exam, #17) Evaluate $\frac{d}{dx} \left(\int_0^{2x} \arctan t dt \right)$ at $x = \frac{1}{2}$.