Calculus 12 **LG 15/16 Test Version B** **/30**

Name:_____ Date:_____

1. Use a left Reiman sum with 4 sub-intervals to approximate the area under the curve $y = \sqrt{x}$ on the interval [0, 4]. Is your approximation overestimating or underestimating the true area? (4 marks)

2. Evaluate $\int x^2 - 3x + 1 \, dx$ (3 marks)

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3. Evaluate $\int \frac{5}{x} - 2e^x \, dx$. (3 marks)

4. Evaluate $\int \frac{7x}{\sqrt{2x^2+1}} \, dx$ (3 marks)

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5. Evaluate $\int_0^4 x - \frac{1}{\sqrt{x}}\ dx$ (4 marks)

6. Evaluate $\int_{-3}^{2} 1 + |x|\, dx$ (4 marks)

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7. Evaluate $\frac{d}{dx}\int_{-2}^{x} \sin t^3 \ dt$ (2 marks)

8. A particle moves along the x axis with an acceleration given by $a(t) = 2t + 1$. If the initial velocity was 0 at time t=0, what is the displacement and total distance travelled on the interval $0 \leq t \leq 4$. (4 marks)

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9. Find the average value of the function $y = \sin x$ on the interval $[0, \frac{\pi}{4}]$. (3 marks)

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