

Math 152 Quiz #8
March 2, 2010

Name: _____

Show all work on a separate sheet. Put a box around your final answer. No calculators are permitted.

1. (3 pts.) Evaluate $\int t^2 \sqrt{9t^2 - 1} dt$ using the following table entry:

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

2. (3 pts.) Use Simpson's rule with $n = 6$ to approximate $\int_2^5 \frac{e^x}{x} dx$.

3. Evaluate the following. Justify your answer.

(a) (2 pts.) $\lim_{t \rightarrow 0} \frac{e^{6t} - 1}{t^2}$

(b) (2 pts.) $\lim_{\theta \rightarrow \pi^-} \frac{\sin \theta}{1 - \cos \theta}$

Note: Trapezoid Approximation

$$\int_a^b f(x) dx \approx \frac{\Delta x}{2} [f(x_0) + 2f(x_1) + 2f(x_2) + \dots + 2f(x_{n-1}) + f(x_n)]$$

Simpson's Rule

$$\int_a^b f(x) dx \approx \frac{\Delta x}{3} [f(x_0) + 4f(x_1) + 2f(x_2) + 4f(x_3) + \dots + 2f(x_{n-2}) + 4f(x_{n-1}) + f(x_n)]$$