

Name: \_\_\_\_\_

### Calculus Practice Quiz #7

This quiz is to determine if you have mastered the material by attending tutoring sessions and completing your homework. Please write legibly and show as much work as possible for each problem.

1. Find a formula for  $dy/dx$  for each function below.

a.  $y = \left(\frac{1}{x}\right)^{x^2}$

b.  $y = (\sin^2 x)^{2x}$

c.  $y = \text{arc sec}(3e^x)$

d.  $y = \arcsin \sqrt{1-4x^2}$

d.  $y = 4x \arctan 2x - \ln(4x^2 + 1)$

2. Find the intervals where the graph is increasing/decreasing and any relative extrema.

$$y = \arcsin \sqrt{1-x^2}$$

3. Evaluate each definite or indefinite integral.

a.  $\int_1^4 \frac{e^{\sqrt{x}}}{\sqrt{x}} dx$

b.  $\int e^{\tan \pi x} \sec^2 \pi x dx$

c.  $\int_0^{\ln 3} \frac{e^x}{\sqrt{e^x + 1}} dx$

d.  $\int e^{2x} (1 + e^x)^4 dx$