

*In lieu of a pre-test, here are some problems you are assumed to know how to do. If you miss more than one, be concerned that your preparation for this course may be deficient.*

1. Integrate  $\int x\sqrt{1-x^2}dx$

2. Find  $f'(x)$ , where  $f(x) = \sqrt{x}$

3. **True or False?**

[i]  $e^{xy} = e^x e^y$

[ii]  $\sqrt{x+y} = \sqrt{x} + \sqrt{y}$

[iii]  $\ln(x) + \ln(y) = \ln(xy)$

[iv]  $\cos(\pi/4) = 1/2$

[v] The derivative of  $|x|$  exists everywhere.

[vi]  $\frac{x^2+3x+2}{x+2} = x + 1$

4. Integrate  $\int \cos^2(x)dx$ .

5. Evaluate

$$\lim_{x \rightarrow 0} \frac{\cos(x)(1 - e^x)}{\sin(x)}$$

6. Find the minimum of the function  $f(x) = x^4 - 2x^2 + 1$  on the interval  $[-2, 2]$ .