

Math 2315 - Calculus 2

Exam #1 - 2017.01.27

Name: _____

1. Compute the following integral: $\int 2z^5 \cos(z^2) dz$

2. Compute the following integral: $\int \frac{x+1}{\sqrt{4+x^2}} dx$

3. Compute the following integral: $\int \frac{\cos(w)}{\sin^2(w)(3+4\sin(w))} dw$

4. Compute the following limit: $\lim_{x \rightarrow 0^+} \tan(x) \ln(x)$

5. Determine the value (if convergent) of the following integral: $\int_{-\infty}^{\infty} \frac{4}{4+r^2} dr$

6. Use the comparison test to determine if the following integral is convergent: $\int_0^{\infty} \frac{\sin^2(x)}{1+e^x} dx$

Stuff which may (or may not) be useful

$$\sin^2(\theta) + \cos^2(\theta) = 1, \quad \tan^2(\theta) + 1 = \sec^2(\theta)$$

$$\int \sec(\theta) d\theta = \ln(|\sec(\theta) + \tan(\theta)|) + \mathcal{C}, \quad \int \frac{1}{1+x^2} dx = \tan^{-1}(x) + \mathcal{C}$$