

Homework for Math 352  
Spring 2020

Hwk Set 1. Due Friday, January 17. Do the following review problems from Calculus I & II (150/250), Linear Algebra (221) and Intro. to Proofs (302). Show all work.

1.  $\lim_{t \rightarrow 2} \frac{t^2 - 4}{t - 2}$
2.  $\lim_{\theta \rightarrow 0} \frac{\sin 2\theta}{3\theta}$
3.  $(\sec(e^x))'$
4.  $\int x \sin x \, dx$
5.  $\int x \sin x^2 \, dx$
6.  $\int_{-1}^1 \tan(x^3) \, dx$
7. Find the Taylor series centered about  $x = 0$  of  $\cos x^2$ .
8. Find the interval of convergence of  $\sum_{n=1}^{\infty} \frac{(2-x)^n}{n}$ .
9. Prove that  $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$ , where  $A$ ,  $B$  and  $C$  are sets.
10. Find the eigenvalues of  $\begin{bmatrix} 5 & 8 & 16 \\ 4 & 1 & 8 \\ -4 & -4 & -11 \end{bmatrix}$ .