Problem Set 1

September 18, 2023

All numbered exercises are from the textbook *Calculus Vol. 3*, by OpenStax.

1. Show that the algebraic and geometric definitions of vector difference $\mathbf{u}-\mathbf{v}$ (given in class) are equivalent.
2. Exercises 2.2.63–101 (odd only).
3. Exercise 2.2.107.
4. Exercise 2.2.110.
5. Exercise 2.2.115.
6. Find the lengths of the sides of the triangle with vertices $P(3,-2,-3)$, $Q(7,0,1)$, $R(1,2,1)$. Is it a right triangle?
7. Exercises 2.3.123–129 (odd only).
8. Exercises 2.3.135–143 (odd only).
9. Exercise 2.3.147.
10. Exercise 2.3.170.
11. Find the values of b such that the angle between the vectors $\langle 2,1,-1\rangle$ and $\langle 1,b,0\rangle$ is $\pi/4$.