**Exercise Set 3 – Vector Calculus, Frank Thorne (thorne@math.sc.edu)**

**Due Friday, February 21, 2020**

(1) Explain, in your own words, what it means for a function $f : \mathbb{R}^n \mapsto \mathbb{R}^m$ to be differentiable, and what its derivative is.

(2) Explain the definition of differentiability of a function $f : \mathbb{R}^n \mapsto \mathbb{R}^m$ in the single-variable case where $n = m = 1$. Why does this correspond to the usual definition of a derivative from single-variable calculus?

(3) Ch. 2.4, 30, 34, 35, 37.

(4) Ch. 2.5, 6, 17-20, 22, 26, 28, 34, 35, 36.

(See the notation introduced above problem 31.)

(5) Ch. 2.6, 2, 3, 12, 14, 20, 24.