V63.0123-1 : Calculus III. Homework 11

Last one! Due Wed Apr 30 at lecture.

17.5: (Review curl and div)
26.

17.7: (Surface integral)
12. Trickier scalar surface integral
21. Simpler vector surface integral

17.8: (Stokes Theorem)
3.
4.
6. This should suddenly become quite easy!
7.
9.
18. Longer. Once you get a double integral, decide which coord system to use for it. Look for symmetry before evaluating messy single integrals.

17.9: (Divergence Theorem)
4. You’ll probably need to correct errors until this comes out right. It’s pretty nice how it does!
6. If you can recognize something about \( \mathbf{F} \) as it crosses the sphere surface, this will help.
9. Quick.
16. Evaluate div \( \mathbf{F} \) before you switch to a new coordinate system.
26. Remember \( D_n \) means derivative in the normal direction. This question is mainly explaining notations. Please be clear.