## Math 2204: Written HW 2 (Due Wednesday 2/5, 5pm)

To obtain (full) credit, show all reasoning and work. If you use a formula, include it in the write-up of that problem. No calculator or other electronic devices for HWs.

- Section 12.4: 8.
- **Section 12.5**: 13, 44.
- **Section 12.6**: 4.
- A) Let  $\boldsymbol{a} = \langle 1, 3, 1 \rangle$  and  $\boldsymbol{b} = \langle 4, 1, 2 \rangle$ .
  - 1. Compute two unit vectors that are perpendicular to both  $\boldsymbol{a}$  and  $\boldsymbol{b}$ .
  - 2. Find the area of the parallelogram spanned by  $\boldsymbol{a}$  and  $\boldsymbol{b}$ .
- **B)** Let S be the plane through point (2, -1, 3) that is parallel to the plane 2x y + z = 3.
  - 1. Find a vector equation for the plane S.
  - 2. Find a scalar equation for the plane S.
- C) Line L goes through the points (1, 5, 3) and (7, 7, 4). Line M goes through point (4, -2, 1) and is parallel to L. At which point does line M intersect the xz-plane?
- **D)** Let L be the line of intersection of the surfaces x 2y z = 4 and x + z = 2.
  - 1. Find a vector equation for the line L.
  - 2. Find a scalar equation for the line L.