

Math 122-002 201730
Practice Assignment # 11

*Please remember that the assignment consists of only a sample of the kind of questions you are supposed to be able to do. It is **not** a safe practice to just do the assignment, and that is why there is a list of “suggested practice problems”.*

1. Compute $\vec{u} \times \vec{v}$, $\vec{v} \times \vec{u}$, and verify that one is the negative of the other.
 - (a) $\vec{u} = -5\check{\mathbf{i}} + 6\check{\mathbf{j}} + \check{\mathbf{k}}$, $\vec{v} = -\check{\mathbf{i}} + 2\check{\mathbf{j}} + \check{\mathbf{k}}$
 - (b) $\vec{u} = 5\check{\mathbf{i}} + 7\check{\mathbf{j}} + 4\check{\mathbf{k}}$, $\vec{v} = 20\check{\mathbf{i}} - 6\check{\mathbf{k}}$.
2. In each case find two vectors, both normal to the given plane.
 - (a) $8x - y + z = 12$
 - (b) $4x + 6y + 4z = -5$.
3. Find the equation of the plane containing the given point and having the given vector as normal vector
 - (a) $(-1, -1, -2)$, $3\check{\mathbf{i}} - \check{\mathbf{j}} + 4\check{\mathbf{k}}$
 - (b) $(2, -3, 4)$, $8\check{\mathbf{i}} - 6\check{\mathbf{j}} + 4\check{\mathbf{k}}$
 - (c) $(-2, -1, 0)$, $4\check{\mathbf{i}} + 2\check{\mathbf{j}} + \check{\mathbf{k}}$
4. Find the equation of the plane containing the points $(0, 1, 2)$, $(-1, 2, 3)$, $(1, 1, 4)$.
5. Find the equation of the line in \mathbb{R}^2 that passes through the point $(2, 3)$ and is perpendicular to the line $5x + y = 2$.
6. Find the equation of the line in \mathbb{R}^3 that passes through the point $(1, 1, -2)$ and is perpendicular to the plane $3x + 5y - 2z = 3$.
7. The intersection any two planes that are not parallel is a line. Find the equation of the line that is the intersection of the planes $x + y + z = 1$ and $x - y - z = 2$.