CSE-4303 CSE5365 Computer Graphics
Practice Problems 01

Solve the following problems. Assume a right-handed 3-dimensional Cartesian coordinate system.

1. Find the length of the vector $v_1 = (1,5,-2)$
2. Normalize vector $v_1 = (1,5,-2)$ i.e, a unit vector which has the same direction as vector v_1
3. Determine if the two vectors $v_1 = (1,5,-2)$ and $v_2 = (4,7,1)$ are orthogonal to each other
4. Find the angle between the two vectors $v_1 = (1,5,-2)$ and $v_2 = (4,7,1)$
5. Find the cross product of two vectors $v_1 = (1,5,-2)$ and $v_2 = (4,7,1)$
6. Find the inner product of two vectors $v_1 = (1,5,-2)$ and $v_2 = (4,7,1)$
7. Given point $p = (5,2,-3)$ find the coordinates of this point after it is rotated 45 degrees around x axis
8. Given point $p = (5,2,-3)$ find the coordinates of this point after it is rotated -30 degrees around y axis
9. Given point $p = (5,2,-3)$ find the coordinates of this point after it is rotated 90 degrees around z axis
10. Given point $p = (5,2,-3)$ find the coordinates of this point after it is translated by $dx = -3$ $dy = 6$, $dz = -1$
11. Given vector $v = (5,2,-3)$ find the coordinates of this vector after it is translated by $dx = -3$ $dy = 6$, $dz = -1$
12. Given the three points $(5,2,-3)$, B (6,8,3), C (2,7,1), find the coordinates of point A after it is rotated 60 degrees around line BC.