423 Makeup Quiz (Assignment)

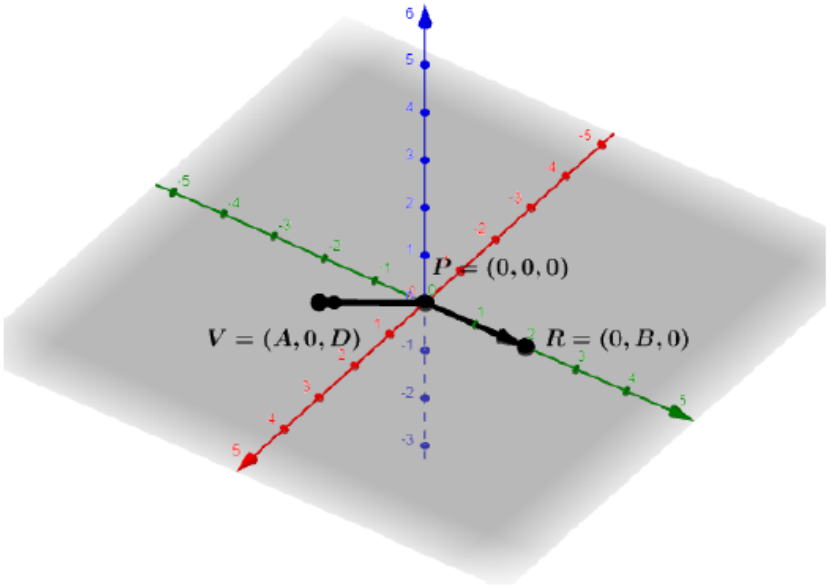
Question-1 (10 mark)

To answer some of the following questions, you will need four variables **A**, **B**, **C** and **D** which are sequentially the first, second, third and fourth pair of digits from the left in your student ID.
For example, if your ID is 15101208, then A= 15, B= 10, C= 12 and D= 8.

a. Given below is the equation for Phong's Illumination model. Mention what each of the variables represent.
For example, I_a represents intensity of ambient light.

$$I = I_a * K_a + I_p * f_{att} (K_d * \max(L.n , 0) + K_s * \max(V.R , 0)^n)$$

b. Imagine you want to find the specular reflection at the origin P= (0,0,0), where light is being reflected along the vector R = (0, B, 0), and the viewer is at the point V = (A, 0, D).
What will be the specular reflection at the origin? given that,
shininess constant, $n = 3$; intensity of light, $\mathbf{I_p = 0.5}$; and specular coefficient, $\mathbf{K_s = 0.5}$



c. Continuing from 3(b), If the viewer changes location to (A, -2, D), what should be the new specular reflection that the viewer sees?

d. Imagine that there is a light source at (D, D, D), and we want to find the diffuse reflection from the origin (0, 0, 0), which is a point on a flat object. The flat object is kept aligned to the x-y plane.

Given that, intensity of light, $\mathbf{I_p = 9}$ and diffuse coefficient, $\mathbf{K_d = 0.5}$, what will be the amount of diffuse reflection?

Question-2 : (5 mark)

Given a point P (A,B,C) . At first P is translated (D,-D,0) amount and then the output point is rotated 30 degree clockwise across the z axis, then 45 degree counterclockwise across y axis and then rotated 60 degree clockwise across x axis with respect to point (-A,C,-D). Find out the output point after applying these operations. [**Here A,B,C,D refers to your roll digits which was mentioned in your question-1**]

Question-3 (5 mark)

Given a CMY color Model (A/100 , B/100 , C/100). Convert the following CMY to HSV and HSL.