(1) For what value of \( b \) are the vectors \( \mathbf{v} = < 1, 4, -7 > \), \( \mathbf{w} = < 2, b, 4 > \), and \( \mathbf{u} = < b, -9, 18 > \) coplanar?

(2) Find a vector perpendicular to the plane that passes through the points \( P(1, 4, 6) \), \( Q(-2, 5, -1) \) and \( R(1, -1, 1) \).

(3) Find the symmetric equation for the line through \( (2, 1, 0) \) and perpendicular both \( \mathbf{i} + \mathbf{j} \) and \( \mathbf{j} + \mathbf{k} \).