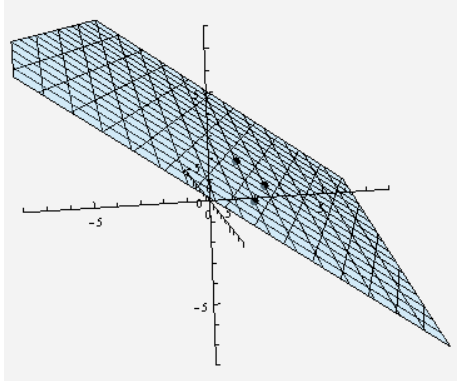


YOUR NAME: \_\_\_\_\_

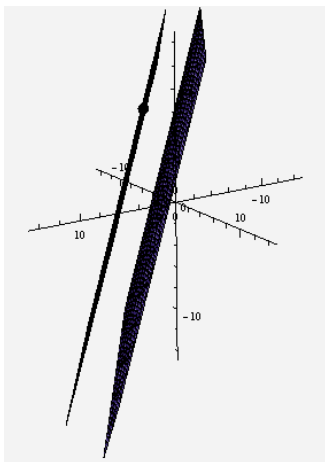
George Voutsadakis

Read each problem **very carefully** before starting to solve it. Each problem is worth 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

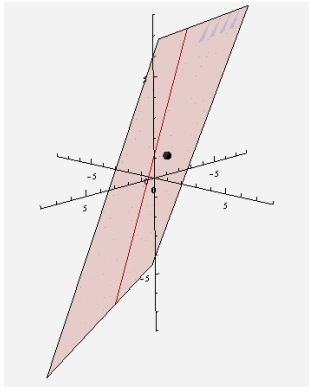
1. Find an equation for the plane passing through  $P = (5, 1, 1)$ ,  $Q = (1, 1, 2)$  and  $R = (2, 2, 1)$ .



2. Find an equation for the plane that passes through  $(4, 1, 9)$  and is parallel to the plane  $3x - 2y + z = 6$ .



3. Find an equation for the plane that contains the point  $P = (-1, 0, 1)$  and the line with equation  $\mathbf{r}(t) = \langle t + 1, 2t, 3t - 1 \rangle$ .



4. Find the intersection of the plane  $x + y + z = 14$  with the line having vector equation  $\mathbf{r}(t) = \langle 1, 1, 0 \rangle + t\langle 0, 2, 4 \rangle$ .

