

HW 2
Math 261, F18

Please see the course syllabus for details on how to turn in your homework assignments. This one is due at the beginning of your class on **Friday, September 7**.

1. Determine the equation of the plane that passes through points $(0, 1, 0)$, $(-1, 0, 1)$, and $(0, -2, 1)$. Please give your answer in the form

$$\square x + \square y + \square z = 1.$$

2. Fill in the blanks of the following parameterization of a line through the points $P_1 = (1, 1, 0)$ and $P_2 = (0, 3, 1)$:

$$\begin{cases} x = -1 + t \\ y = \square + \square t \\ z = \square + \square t \end{cases}$$

3. The line given by the parameterization

$$\begin{cases} x = 1 + t \\ y = 3t \\ z = 2 - 2t \end{cases}$$

and the plane given by $x + 2y + z = 8$ intersect in a point. Find that point.

4. Compute the derivative $\mathbf{r}'(t)$ of vector function $\mathbf{r}(t) = \langle e^t, 3t^2 - 2t + 5, \sin(t) \rangle$.
5. Suppose a particle moves according to the position function $\mathbf{r}(t) = \langle t^3, t^2, 4t + 1 \rangle$. Determine the acceleration $\mathbf{a}(2)$ of the particle at $t = 2$.