

HW 2
Math 261, F17

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 **Wednesday, September 6.**

1. Determine the equation of the plane that passes through points $(0, 0, 1)$, $(1, 0, 1)$, and $(0, 2, 3)$. Please give your answer in the form

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

omitting any term that has a coefficient of 0.

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

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

3. The line given by the parameterization

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

and the plane given by $x + y + z = 1$ 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 $\mathbf{r}(t) = \langle t^2, t^3, 4t + 1 \rangle$. Determine the acceleration $\mathbf{a}(2)$ of the particle at $t = 2$.