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

$$ □ x + □ y + □ z = 1. $$

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

$$ \begin{align*}
  x &= -1 + t \\
  y &= □ + □ t \\
  z &= □ + □ t
\end{align*} $$

3. The line given by the parameterization

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

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

4. Compute the derivative $r'(t)$ of vector function $r(t) = \langle e^t, 3t^2 - 2t + 5, \sin(t) \rangle$.

5. Suppose a particle moves according to the position function $r(t) = \langle t^3, t^2, 4t + 1 \rangle$. Determine the acceleration $a(2)$ of the particle at $t = 2$. 