University of Lethbridge
Department of Mathematics and Computer Science
MATH 1410 - Tutorial #5
Wednesday, February 14

Additional practice: (**do not submit**).

1. Find the equation of the plane containing the point $(-3, 2, 5)$ that is perpendicular to the line $\langle x, y, z\rangle = \langle 1 + 5t, -2 - 4t, 2\rangle$.

2. Find the equation of the plane containing the lines

$$\ell_1(s) = \langle 5, 3, 0\rangle + s\langle 3, 1, -2\rangle \quad \text{and} \quad \ell_2(t) = \langle -2, 4, 4\rangle + t\langle 1, -3, 0\rangle$$

   (These were shown to intersect in the Tutorial #4 additional practice.)

3. Find the distance between the parallel planes

$$3x - y + z = 4 \quad \text{and } 3x - y + z = 6.$$

1. Find the equation of the plane that contains the point $P = (-2, 0, 5)$ and the line $\langle x, y, z \rangle = \langle 5 - 3t, 2 - t, -4 + 5t \rangle$.

2. Determine the equation of the line of intersection of the planes $x - 3y + 2z = 4$ and $-2x + 4y - 3z = -3$.

3. Find the point Q on the plane $x - 2y - 2z = 1$ that is closest the point $P = (2, 8, 5)$, and the distance from P to the plane,

   (a) Using vector projections.
   Hint: Begin by finding any point P_0 that lies on the plane. **Include a diagram.**

   (b) By finding where the line through P in the direction perpendicular to the plane intersects the plane.