Homework - Distance:

1. Find the distance between the parallel lines:

   a) $\ell_1 : 5x - 2y + 25 = 0$, $\ell_2 : 5x - 2y - 5 = 0$. $\left\{\frac{30\sqrt{29}}{29}\right\}$

   b) $\ell_1 : 2x - y + 14 = 0$, $\ell_2 : 2x - y + 3 = 0$ $\left\{\frac{11\sqrt{5}}{5}\right\}$

2. Find the distance between:

   a) the point $A(-6,5,-3)$ and the line $(x, y, z) = (6,1,3) + t(5,-3,3)$ {2.76}

   b) the lines $\ell_1 : \vec{r} = (1,6,-2) + t(1,-2,5)$, $\ell_2 : \vec{r} = (3,-4,-9) + k(-2,7,1)$ {0.387}

   c) the point $A(-1,8,-4)$ and the line $(x, y, z) = (3,-4,0) + t(-2,7,3)$ {8.53}

   d) the lines $\ell_1 : \vec{r} = (3,-5,2) + t(-3,-1,4)$, $\ell_2 : \vec{r} = (3,3,-1) + k(2,3,-9)$ {6.4}

   e) the lines $\ell_1 : \vec{r} = (4,-2,4) + t(-3,-1,4)$, $\ell_2 : \vec{r} = (3,7,-1) + k(6,2,-8)$ {9}

   f) the lines $\ell_1 : \vec{r} = (7,1,-3) + t(-1,4,2)$, $\ell_2 : \vec{r} = (-3,6,-5) + k(-2,8,4)$ {9.84}