Practice worksheet | Vectors in three dimensions

Closest points and distances including skew lines

Name: _____ Date: _____

6 questions | 14 marks

1. Find the closest point on $(t, 0, 0)$ to $(3, 4, 5)$ and its distance. [2 marks]

2. Find the distance from $(1, 2, 3)$ to $x + y + z = 0$. [2 marks]

3. Find the foot of the perpendicular from $(1, 2, 3)$ to $x + y + z = 0$. [2 marks]

4. Find the closest points and distance between $\ell_1 = s(1, 1, 0)$ and $\ell_2 = (0, 2, 1) + t(1, 0, 1)$. [4 marks]

5. Find the distance between $(s, 0, 0)$ and $(t, 3, 4)$. [2 marks]

6. For line $(1, 0, 0) + t(1, 1, 0)$ and $P(0, 1, 2)$, find the closest t and distance. [2 marks]