Name: Score:

Math 1321 Week 5 Worksheet Due Thursday 02/13

1. (1 point) Compute the following cross product identities using the properties on page 656.
   (a) $\mathbf{j} \times \mathbf{i} =$

   (b) $\mathbf{j} \times \mathbf{k} =$

   (c) $\mathbf{k} \times \mathbf{i} =$

   (d) $\mathbf{i} \times \mathbf{k} =$

2. (2 points) Find the line L through the points $P = (-2, 1)$ and $Q = (3, 2)$
   (a) Write L as a line in vector(parametric) form

   (b) Convert your previous answer to a line in scalar(standard) form, i.e. $ax + by = c$.

3. (4 points) Find the equation of the plane that passes through the point $P = (-3, 1, 1)$ and contains the line L, $x = 1 - t$, $y = 2 + t$, and $z = 4 - 6t$.

   (a) Write your answer in part a in scalar(standard) form, i.e $ax + by + cz = d$.

   (b) Verify your answer by checking that P and two points on the line L belong to the plane.

4. (2 points) Find the distance from the point $P = (-6, 3, 5)$ to the plane $3x + 2y + 6z = 5$.

5. (2 points) Find the distance between the parallel planes $6z = 4y - 2x$ and $9z = 1 - 3x + 6y$.

Review

6. (Make up 1 point) Determine whether the series is absolutely convergent for $r < 1$.

$$\sum_{k=1}^{\infty} k(r)^k$$

7. (Make up 1 point) Prove that .999999... = 1

8. (Make up 1 point) Compute the Taylor series centered about a = 1 for $f(x) = 10^x$.