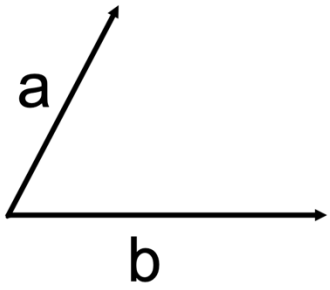
Exam 11 Name: _____ RHS
Multi. Calc.

Show your work for full credits. (#1 to 5: 95 pts / #6: 10 pts)

1. Two vectors as shown below have $|a| = 3$, $|b| = 5$, and angle between them is $60°$.



   a. $a \cdot b$
   b. $|a \times b|$
   c. What is the direction of $a \times b$?
   d. $a \times a$
   e. $a \cdot a$
   f. $comp_b a$

2. Given the points A(0, 0, 0), B(1, 4, 0), C(2, 0, 5), and D(0, 1, 6), where B, C, and D are neighboring vertices of A in parallelepiped.
   a. Find the volume of the parallelepiped
   b. Find the surface area of the parallelepiped

3. Find the acute angle between two diagonals of a cube.

4. Find the distance from the origin to the line
$$x = 2 - t, \quad y = 1 + 2t, \quad z = -2 + t$$

5. Determine whether the lines given are parallel, skew, or intersecting.
If parallel, find the distance between the lines, if intersecting, find the point of intersection.
$$x = 2 - t, \quad y = 1 + 2t, \quad z = -2 + t$$
$$x = 2t, \quad y = 8 - t, \quad z = 5 + 3t$$

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6. Let *B* be a solid box with length *L*, width *W*, and height *H*. Let *S* be the set of all points that are a distance at most 1 from some point of *B*. Express the volume of *S* in terms of *L*, *W*, and *H*.