Math 001C Assignment 12.3 Name:_____

DIRECTIONS To receive full credit, you must provide complete legible solutions to the following problems in the space provided. No Attached papers. Transfer all your answers to the space provided.

1. Find the angle between the vectors. (First find an exact   Ans_____
    expression and then approximate to the nearest degree.)

    $\mathbf{a} = \langle 3, -1, 7 \rangle, \mathbf{b} = \langle -2, 4, 3 \rangle$

2. Find, correct to the nearest degree, the three   Ans_____
    angles of the triangle with the given vertices.

    $A(1, 0, -1), \quad B(3, -5, 0), \quad C(1, 4, 2)$

3. Find the acute angle between the lines.   Ans_____
    Round the angle to the nearest degree.

    $x - y = 3, \quad 2x + y = 1$

4. Find the acute angles between the curves at their points of intersection. (The angle
    between two curves is the angle between their tangent lines at the point of intersection.
    Give your answers in degrees, rounding to one decimal place

    $y = x^2, \quad y = x^3$ Ans_____

5.	Find the scalar and vector projections of **v** onto **u**.	Ans_____
	$$\mathbf{v} = 2\mathbf{i} + \mathbf{j} - \mathbf{k}, \quad \mathbf{u} = \mathbf{i} + 2\mathbf{j} + \mathbf{k}$$
	Illustrate with a planar graph.(3D vectors drawn on 2D plane)

6.	Find the work done by a force F that moves an object from	Ans_____
	the point P to the point Q along a straight line. The distance
	is measured in meters and the force in newtons.
	$$\mathbf{F} = 8\mathbf{i} - 8\mathbf{j} + 8\mathbf{k}; \quad P = (0,9,7), \quad Q = (7,15,19)$$

7.	A sled is pulled along a level path through snow by a rope.	Ans_____
	A 25-lb force acting at an angle of $40°$ above the horizontal
	moves the sled 90 ft. Find the work done by the force.
	(Round your answer to the nearest whole number.)