

Name \_\_\_\_\_ ID \_\_\_\_\_

MATH 253

Quiz 2

Spring 2007

Sections 501-503

P. Yasskin

1-4	/20
5	/ 5
Total	/25

Multiple Choice & Work Out: (5 points each)

1. Find the equation of the line through the point  $P = (4, 3, 2)$  in the direction  $\vec{v} = (2, 1, -1)$ .  
Where does this line pass through the  $xy$ -plane?

- a.  $(8, 5, 0)$
- b.  $(1, 2, 0)$
- c.  $(8, -5, 0)$
- d.  $(1, -2, 0)$
- e.  $(4, \frac{5}{2}, 0)$

2. Find the equation of the plane through the point  $P = (1, 3, 3)$  with normal  $\vec{N} = (4, 2, -2)$ .  
Where does this plane pass through the  $z$ -axis?

- a.  $(0, 0, -2)$
- b.  $(0, 0, -1)$
- c.  $(0, 0, 1)$
- d.  $(0, 0, 2)$
- e.  $(0, 0, 4)$

3. Classify the curve  $x^2 - y^2 - 6x - 4y = -4$

- a. circle with center  $(3, -2)$
- b. circle with center  $(-3, 2)$
- c. hyperbola opening left and right
- d. hyperbola opening up and down
- e. parabola with vertex  $(-3, 2)$

4. Classify the surface  $x^2 + y^2 - 4x - 4y - z = -4$

- a. elliptic paraboloid opening up
- b. elliptic paraboloid opening down
- c. hyperboloid of 1 sheet
- d. hyperboloid of 2 sheets
- e. hyperbolic paraboloid

5. Find the point where the line  $\frac{x-1}{-1} = \frac{y-5}{2} = z-7$  intersects the plane  $3x - 2y + z = 12$ .

HINT: Use the line to write  $x$  and  $y$  as functions of  $z$ .

Solve this on the back of the Scantron. Show all work.