

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

MATH 251                  Quiz 2                  Spring 2007  
Sections 509                  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  $\vec{v} = (1, 2, -1)$ .  
Where does this line pass through the  $xy$ -plane?

- a.  $(2, -1, 0)$
- b.  $(6, 7, 0)$
- c.  $(2, 1, 0)$
- d.  $(6, -7, 0)$
- e.  $(3, \frac{7}{2}, 0)$

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

- a.  $(0, 0, -3)$
- b.  $(0, 0, -1)$
- c.  $(0, 0, 1)$
- d.  $(0, 0, 3)$
- e.  $(0, 0, 6)$

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

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

5. Find the point where the line  $\frac{x-1}{-1} = \frac{y-5}{2} = z-6$  intersects the plane  $3x - 2y + z = 11$ .

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

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