Precalc BC Higher Dimensions – REVIEW Name:

a) Find the plane containing S(-1, 2, 2); T(-2, 1, 0); U(0, 1, 1)

b) Find the line containing A(3, 4, 5) and B (-1, 0, 1)

c) Find the intersection of the plane and the line.

1. Consider the three points P(-1, 0, 4); Q(5, 3, 7); R(-5, -2, 2)

a) Show that the three points are collinear by finding the equation of the line  and showing that R is on this line.

b) Show that the three points are collinear by finding the measure of  using the dot product.

c) Write the equation of the sphere with diameter .

d) Find the intersection of the line  with the plane: x + 3y - 2z = 6

1. Identify by name and sketch. Be sure to indicate axes and intercepts.

a)  b)  c) 

d) e)  f) 

g)  h)  i) 

1. Find the endpoint P of segment  with Q(7, -2, 4) and midpoint M(4, 3, 0).
2. Write the equation of...

a) A plane parallel to the *xy*-plane with z intercept (0,0,4).

b) A plane parallel to 2x - 3y + z = 1, and containing the point (6,6,4).

c) A plane with intercepts (6, 0, 0), (0, 4, 0), and (0, 0, 8).

d) What is the volume of the pyramid bounded by the three coordinate planes and the plane in part (c)?

1. A submarine on the surface of the ocean with a velocity of 28 knots/hour and a bearing of 157° begins a dive with an angle of descent of 22°. A current of 7 knots/hour flows parallel to the ocean floor with a bearing of 47°. Find a vector in rectangular form that describes the motion of the submarine relative to the ocean floor: .
2. The point P(7, -2, 5) is first rotated 90° around the *x*-axis and then reflected through *yz*-plane. Where does it end up?
3. Describe each of these as a single transformation:

a) b) c)

  

1. Consider the **4-D** points P(1, 2, 2, 3); Q(2, 0, -1, 3) and R(3, 1, 1, 4)

a) Find  and 

b) Find the measure of using dot product.

c) Find the exact area of ∆QPR (use your answer from a).

d) Write an equation of the line through P, parallel to .