

Classroom Voting Questions: Multivariable Calculus

12.1 Functions of Two Variables

1. A function $f(x, y)$ can be an increasing function of x with y held fixed, and be a decreasing function of y with x held fixed.
 - (a) True
 - (b) False

2. You awaken one morning to find that you have been transferred onto a grid which is set up like a standard right-hand coordinate system. You are at the point $(-1, 3, -3)$, standing upright, and facing the xz -plane. You walk 2 units forward, turn left, and walk for another 2 units. What is your final position?
 - (a) $(-1, 1, -1)$
 - (b) $(-3, 1, -3)$
 - (c) $(-3, 5, -3)$
 - (d) $(1, 1, -3)$

3. Starting at the origin, if you move 3 units in the positive y -direction, 4 units in the negative x -direction, and 2 units in the positive z -direction: you are at:
 - (a) $(3, 4, 2)$
 - (b) $(3, -4, 2)$
 - (c) $(4, 3, 2)$
 - (d) $(-4, 3, 2)$

4. Which of the following points lies closest to the xy -plane?
 - (a) $(3, 0, 3)$
 - (b) $(0, 4, 2)$
 - (c) $(2, 4, 1)$
 - (d) $(2, 3, 4)$

5. Which of the following points lies closest to the origin?
- (a) (3,0,3)
 - (b) (0,4,2)
 - (c) (2,4,1)
 - (d) (2,3,4)
6. Which of the following points lies closest to the y -axis?
- (a) (3,0,3)
 - (b) (0,4,2)
 - (c) (2,4,1)
 - (d) (2,3,4)
7. The point (2,1,3) is closest to:
- (a) the xy plane
 - (b) the xz plane
 - (c) the yz plane
 - (d) the plane $z=6$
8. Which of the following points lies closest to the point (1,2,3)?
- (a) (3,0,3)
 - (b) (0,4,2)
 - (c) (2,4,1)
 - (d) (2,3,4)
9. Sphere A is centered at the origin and the point (0,0,3) lies on it. Sphere B is given by the equation $x^2 + y^2 + z^2 = 3$. Which of the following is true?
- (a) A encloses B
 - (b) A and B are equal
 - (c) B encloses A
 - (d) none of the above

10. The points $(1,0,1)$ and $(0,-1,1)$ are the same distance from the origin.
- (a) True
 - (b) False
11. The point $(2, -1, 3)$ lies on the graph of the sphere $(x - 2)^2 + (y + 1)^2 + (z - 3)^2 = 25$.
- (a) True
 - (b) False
12. In a table of values for a linear function, the columns must have the same slope as the rows.
- (a) True
 - (b) False
13. The set of all points whose distance from the z -axis is 4 is the:
- (a) sphere of radius 4 centered on the z -axis
 - (b) line parallel to the z -axis 4 units away from the origin
 - (c) cylinder of radius 4 centered on the z -axis
 - (d) plane $z = 4$