TEST PREP on Chapter 13 - Dr. Loveless

PARTICIPATION CODE: Don't forget to ask your TA for the participation code! Enter this on Canvas before the end of quiz section!

Let's put everything together. The following contains the last two pages of the spring 2019 exam 1. Spend 5-10 minutes reading these two pages. Think about how you would react if you saw similar problem. After 5-10 minutes, ask your TA about one or two of the questions (as a group), then switch over to working on the 13.3 and 13.4 homework.

- 1. (13 pts) For ALL parts below, consider the curve, C, given by x = 5 t, y = t, $z = t^2 10$.
 - (a) Find the **two** points (x, y, z) where the curve, C, intersects the cylinder $x^2 + y^2 = 13$.

(b) Find parametric equations for the tangent line, L, to the curve, C, at t = 1.

(c) Consider a different line L_2 given by x = -2 + 6u, y = 2 + 4u, and z = 5 + 2u. This line, L_2 , and the curve, C, intersect in one point. Find the angle of intersection (round your answer to the nearest degree).

- 2. (12 pts) For ALL parts below, consider the curve given by the position function $\mathbf{r}(t) = \langle t^3, 3t^2, 6t \rangle$.
 - (a) Multiple Choice (Circle ALL that are true, there may be more than one): Every point on the curve is also on the surface:

Circle ALL that true: (i) 18x = yz (ii) $y^2 + z^2 = 1$ (iii) $12y = z^2$ (iv) y - z = 0

(b) Find the curvature, κ , of $\mathbf{r}(t)$ at t = 0. (Reminder: You don't need to find the general formula, only the value at t = 0.)

(c) Find the distance (arc length) along the curve $\mathbf{r}(t)$ from the point (0,0,0) to (1,3,6).