

# Class 6, Practice Problems

## Multivariable Calculus

February 14, 2020

### 12.3 Arc Length

1. Find an arc length function of the curve

$$\mathbf{r}(t) = (4 + \cos t)\mathbf{i} + (5 + \sin t)\mathbf{j}$$

that has the same orientation as the given curve and for which the reference point corresponds to  $t = 0$ .

2. (a) Find the arc length parametrization of the line

$$x = 1 + t, \quad y = 3 - 2t \quad z = 4 + 2t$$

that has the same direction as the given line and has reference point  $(1, 3, 4)$ .

- (b) Use the parametric equations obtained in part (a) to find the point on the line that is 25 units from the reference point in the direction of increasing parameter.