

## 8 For lecture on 10/23

1. (reference Midterm practice question 5) Let  $\gamma$  be the graph of  $y = e^{-x^2}$ ,  $x \in [-2, 2]$  in  $\mathbb{R}^2$ .
  - (a) Give a parametric equation for  $\gamma$ .
  - (b) Setup the integral of the length of  $\gamma$ . (You don't need to evaluate the integral).
  - (c) Let  $S$  be the surface of revolution generated by rotating  $\gamma$  around the  $x$ -axis. Write a parametric equation for  $S$ .
  - (d) Give the tangent plane of  $S$  at point  $P(1, \frac{1}{2e}, \frac{-\sqrt{3}}{2e})$ .
2. Given  $A(2, 1, 7)$ ,  $B(4, 0, 5)$ ,  $C(1, 0, 1)$ , find the parametric equation of the triangle  $ABC$  in  $\mathbb{R}^3$ .