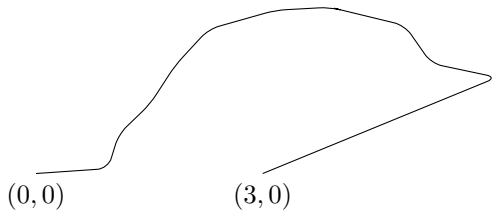
3. (15 points) Let C be the following curve from the point $(0, 0)$ to the point $(3, 0)$:



Calculate

$$\int_C \vec{F} \cdot \vec{T} \, \mathrm{d}s,$$

where $\vec{F} = (e^x \cos y + 2x/9)\vec{\imath} - (e^x \sin y)\vec{\jmath}$.

6. (10 points) Set up **but don't solve** a double integral to calculate the surface area of the portion of $z = x^2 - y^2$ which lies above the disk $x^2 + y^2 \leq 3$.