MAT-2464 - Lista 1

(I) Esboce o traço de cada uma das seguintes curvas em $\mathbb{R}^2$:

(1) $\gamma(t) = (t, 1)$
(2) $\gamma(t) = (3t, t)$
(3) $\gamma(t) = (4t + 2, t - 1)$
(4) $\gamma(t) = (t, 2t^3)$
(5) $\gamma(t) = (t^2, t)$
(6) $\gamma(t) = (sent, t)$, $t > 0$
(7) $\gamma(t) = (3cost, 3sent)$
(8) $\gamma(t) = (3cost, 4sent)$
(9) $\gamma(t) = (e^t cost, e^t sent)$, $t \geq 0$
(10) $\gamma(t) = (e^{-t} cost, e^{-t} sent)$, $t \geq 0$

(II) Esboce os traços das seguintes curvas em $\mathbb{R}^3$:

(1) $\gamma(t) = (t, t, 1)$, $t \geq 0$
(2) $\gamma(t) = (1, t, 1)$, $t \geq 0$
(3) $\gamma(t) = (2cost, 2sent, 5)$
(4) $\gamma(t) = (cost, 3sent, 4)$
(5) $\gamma(t) = cost, sent, t$, $t \geq 0$
(6) $\gamma(t) = sent, sent, \sqrt{2}cost)$

(III) Determine a reta tangente à curva $\gamma(t) = (cost, sent, t)$ no ponto $\gamma(\frac{\pi}{4})$.

(IV) Determine a reta tangente à curva dada por interseção das superfícies $x^2 + y^2 + z^2 = 10$ com o plano $z = 3x$ no ponto $(\frac{\sqrt{3}}{2}, \frac{\sqrt{10}}{2}, \frac{3\sqrt{3}}{2})$.