a) $y^2 = x - 1$

$y(t) = t$

$t^2 = x - 1$

$x = 1 + t^2$

Parametrizirano:

$x = 1 + t^2$

$y(t) = t \quad , \quad t \in \mathbb{R}$

b) $4x^2 + 9y^2 = 36y$

$4x^2 + 9(y^2 - 4y) = 0$

$4x^2 + 9(y-2)^2 = 36$

$\frac{x^2}{9} + \frac{(y-2)^2}{4} = 1$

$x = 3\cos t$

$y - 2 = 2\sin t \Rightarrow y = 2\sin t + 2$

Parametrizirano:

$x = 3\cos t$

$y = 2\sin t + 2, \; t \in [0, 2\pi]$

c) $r = 1 + \cos\varphi$

$x = r\cos\varphi = (1 + \cos t)\cos t \Rightarrow x(t) = (1 + \cos t)\cos t$

$y = r\sin\varphi = (1 + \cos t)\sin t \quad t \in [0, 2\pi]$

1. a) $A(1, 4, -2)$ $\quad B(3, 9, 6)$

$\frac{x - x_1}{x_2 - x_1} = \frac{y - y_1}{y_2 - y_1} = \frac{z - z_1}{z_2 - z_1} = t$

$\frac{x-1}{2} = \frac{y-4}{5} = \frac{z+2}{8} = t$

$x(t) = 2t + 1$

$y(t) = 5t + 4$

$z(t) = 8t - 2 \quad , \quad t \in [0, 1]$

3. a) $r(t) = 3(t^2-1)\vec{i} + \cos t\,\vec{j} + \frac{1}{1-t}\vec{k}$

$\lim_{t\to 0} r(t)$

$\lim_{r(t)\to 0} = 3\lim_{t\to 0}(t^2-1)\vec{i} + \lim_{t\to 0}\cos t\,\vec{j} + \lim_{t\to 0}\frac{1}{1-t}\vec{k}$

$= -3\vec{i} + \vec{j} + \vec{k}$

b) $\lim_{r(t)\to 0} = \cos\pi\,\vec{i} + \sin\pi\,\vec{j} + e^0\vec{k}$

$= -\vec{i} + \vec{k}$

c) $\lim_{r(t)\to 0} = \lim_{t\to 0}\frac{\sin 2t}{t}\vec{i} + e^0\vec{j} + 0\vec{k}$

$= \vec{i} + \vec{j}$

▷▷▷ b i c nije mi se dalo pisat sve

4. Valjda znamo derivirat

5. a) $r(t) = 3t^2\vec{i} + (1-t)\vec{j} - (1+t^2)\vec{k} \quad + (3,2,-2)$

$r'(t) = 6t\vec{i} - \vec{j} - 2t\vec{k}$

$y(t) = 2 \qquad 1-t = 2 \Rightarrow t = -1$

$s(t) = -6\vec{i} - \vec{j} + 2\vec{k}$

$\frac{x-3}{-6} = \frac{y-2}{-1} = \frac{z+2}{2}$

$t(s) = 3\vec{i} + 2\vec{j} - 2\vec{k} + s(-6\vec{i} - \vec{j} + 2\vec{k})$

$s(t) = -6\vec{i} - \vec{j} + 2\vec{k}$

$\frac{x-3}{-6} = \frac{y-2}{-1} = \frac{z+2}{2}$

$t(0) = 3\vec{i} + 2\vec{j} - 2\vec{k} + u(-6\vec{i} - \vec{j} + 2\vec{k})$

b) $r(t) = \cos \pi t\, \vec{i} + \sin \pi t\, \vec{j} + t\vec{k}$ $\quad t = 2$

$r(2) = \vec{i} + 2\vec{k}$

$r'(t) = -\pi \sin \pi t\, \vec{i} + \pi \cos \pi t\, \vec{j} + \vec{k}$

$r'(2) = \pi\vec{j} + \vec{k} \Rightarrow s$

$t(u) = \vec{i} + 2\vec{k} + u(\pi\vec{j} + \vec{k})$

c) $x^2 + y^2 = x \qquad x + z = 3 \qquad T(1,0,2)$

$(x - \frac{1}{2})^2 + y^2 = \frac{1}{4} \qquad x = 3 - z$

$x - \frac{1}{2} = r\cos t = \frac{1}{2}\cos t$

$y = r \sin t = \frac{\sin t}{2}$ $\qquad r(t) = (\frac{1}{2}\cos t\, \vec{i} - \frac{1}{2})\vec{i} + (\frac{\sin t}{2}\vec{j} + (\frac{5}{2} - \frac{\cos t}{2})\vec{k}$

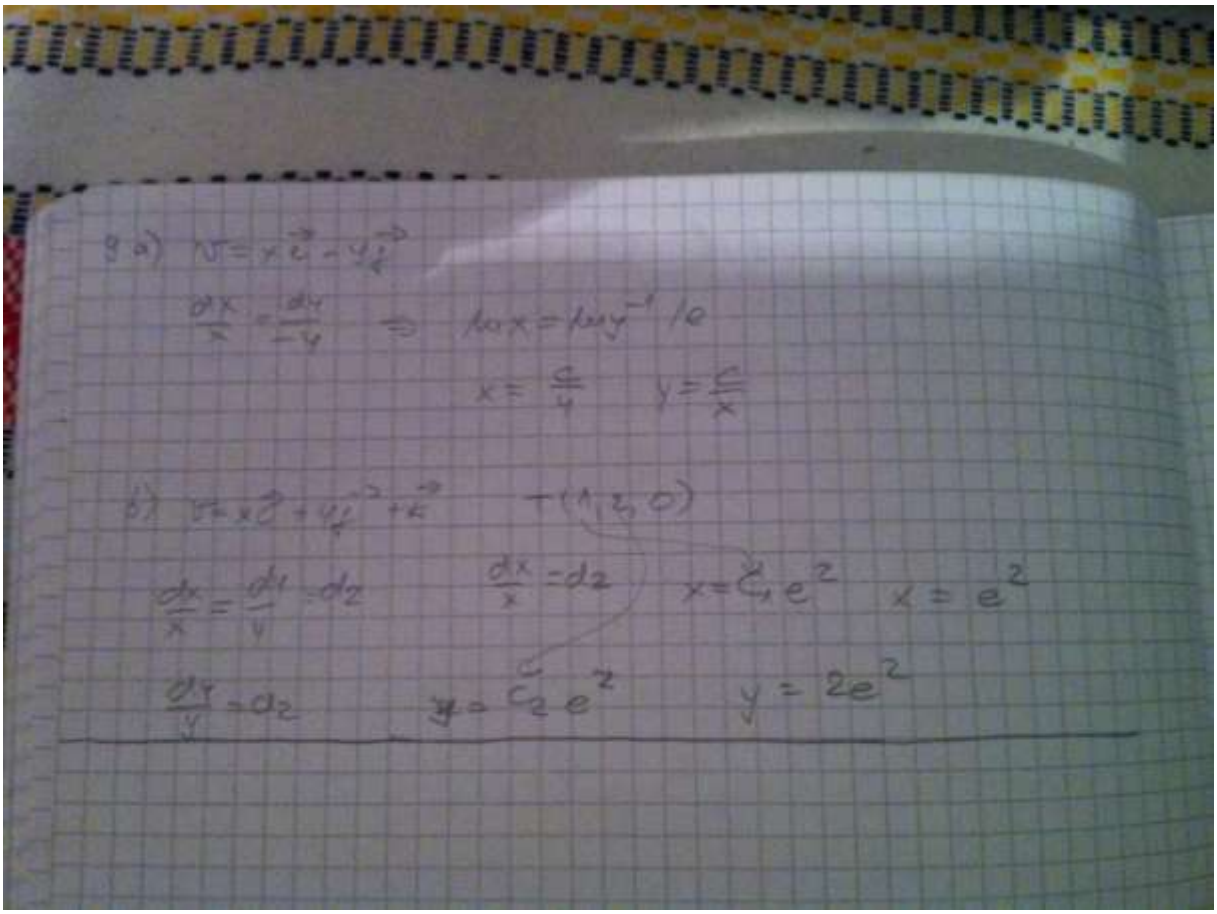
$z = \frac{5}{2} - \frac{\cos t}{2}$ $\qquad r' = (+\frac{1}{2}\sin t)\vec{i} + \frac{1}{2}\cos t\, \vec{j} + \frac{1}{2}\sin t\, \vec{k}$

$t = 0$

$s = \frac{1}{2}\vec{j}$

$r = \vec{i} + 2\vec{k}$

$t(u) = \vec{i} + 2\vec{k} + u \cdot \frac{1}{2}\vec{j}$



9 a) $\vec{v} = x\vec{i} - y\vec{j}$

$\frac{dx}{x} = \frac{dy}{-y} \Rightarrow \ln x = \ln y^{-1} + c$

$x = \frac{c}{y} \quad y = \frac{c}{x}$

b) $\vec{v} = x\vec{i} + y\vec{j} + z\vec{k}$ $+(1,3,0)$

$\frac{dx}{x} = \frac{dy}{y} = dz \qquad \frac{dx}{x} = dz \qquad x = c_1 e^z \qquad x = e^z$

$\frac{dy}{y} = dz \qquad y = c_2 e^z \qquad y = 2e^z$