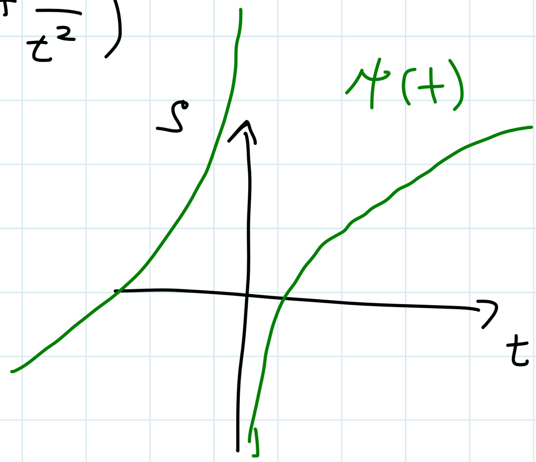
5.3.a) $c = \left(t, \sqrt{2}\ln t, \frac{1}{t}\right)$; $t \in (0, +\infty)$

$$c' = \left(1, \frac{\sqrt{2}}{t}, -\frac{1}{t^2}\right)$$

$$\|c'\| = \sqrt{1 + \frac{2}{t^2} + \frac{1}{t^4}} = \sqrt{\left(1+\frac{1}{t^2}\right)^2} = \left(1+\frac{1}{t^2}\right)$$



$$\psi(t) = \int \left(1+\frac{1}{t^2}\right) dt = \boxed{t - \frac{1}{t} = s}$$

$$t^2 - ts - 1 = 0$$

$$t = \frac{s \pm \sqrt{s^2+4}}{2}$$

ale pro $t > 0$ bereme znaménko +

tedy $t = \frac{s+\sqrt{s^2+4}}{2}$; $s \in (-\infty, +\infty)$

a $c(s) = \left(\frac{s+\sqrt{s^2+4}}{2}, \sqrt{2}\ln\left(\frac{s+\sqrt{s^2+4}}{2}\right), \frac{2}{s+\sqrt{s^2+4}}\right)$

$s \in (-\infty, \infty)$

je parametrizace obloukem.