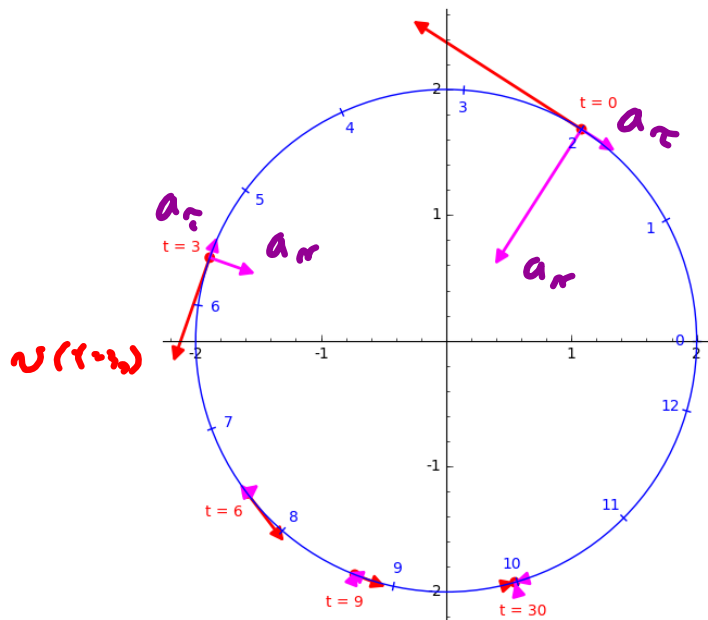


3.3. Za gibanje opisano u prethodnom zadatku izračunajte tangencijalno i radijalno ubrzanje te iznos ukupnog ubrzanja $|\vec{a}(t)|$ materijalne točke u trenucima $t = 3 \text{ s}$ i $t = 6 \text{ s}$.

$$\begin{aligned}\vec{a}(t) &= \underset{a_\tau}{\ddot{s}} \vec{\tau} + \underset{a_r}{\frac{\dot{s}^2}{s}} \vec{n} \\ \dot{s} &= \frac{d}{dt} (s_0 + b(1 - e^{-ct})) = -b \cdot (-c) e^{-ct} \\ \dot{s} &= bc e^{-ct} \\ \ddot{s} &= \frac{d}{dt} (s_0 + b(1 - e^{-ct})) = \frac{d}{dt} bc e^{-ct} \\ \ddot{s} &= bc(-c) e^{-ct} = -bc^2 e^{-ct} \\ \vec{a}_\tau &= -bc^2 \cdot e^{-ct} \vec{\tau} \\ \vec{a}_r &= \frac{b^2 c^2 e^{-2ct}}{R} \vec{n} \\ |\vec{a}(t)| &= \sqrt{a_\tau^2 + a_r^2} \\ &= \sqrt{(-bc^2 e^{-ct})^2 + \left(\frac{b^2 c^2 e^{-2ct}}{R}\right)^2} \\ &= bc^2 e^{-ct} \sqrt{1 + \frac{b^2 e^{-2ct}}{R^2}} \\ |\vec{a}(t=3\text{s})| &= 0,4236 \text{ m s}^{-2} \\ |\vec{a}(t=6\text{s})| &= 0,1509 \text{ m s}^{-2}\end{aligned}$$

ožu 26-11:33



ožu 26-15:05