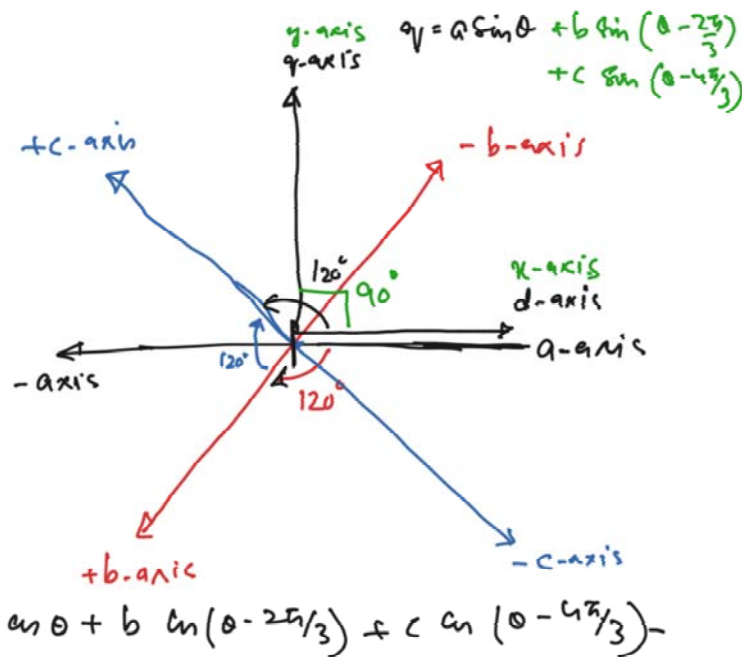
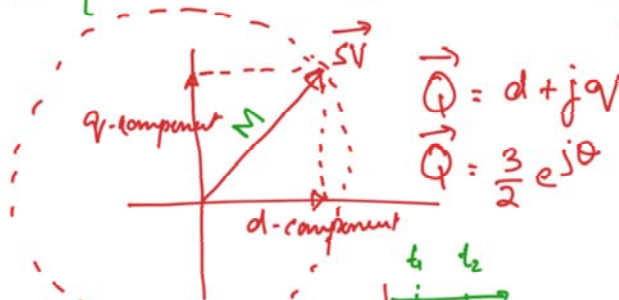


# SVPWM

Thursday, 17 October 2019 6:07 PM

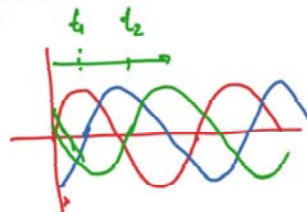


$$\begin{bmatrix} d \\ q \end{bmatrix} = \begin{bmatrix} \cos \theta & \cos \left( \theta - \frac{2\pi}{3} \right) & \cos \left( \theta - \frac{4\pi}{3} \right) \\ \sin \theta & \sin \left( \theta - \frac{2\pi}{3} \right) & \sin \left( \theta - \frac{4\pi}{3} \right) \end{bmatrix} \begin{bmatrix} a \\ b \\ c \end{bmatrix}$$

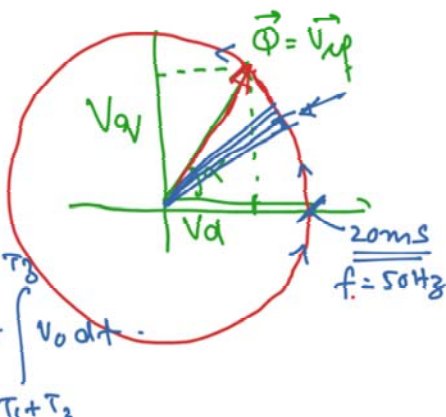


$$M = \sqrt{V_d^2 + V_q^2}$$

$$V_{ref} = \sqrt{V_d^2 + V_q^2}$$



$$\alpha = \tan^{-1} \left( \frac{V_q}{V_d} \right)$$

$$\int_0^{T_3} V_{ref} dt = \int_0^{T_1} V_1 dt + \int_{T_1+T_2}^{T_3} V_2 dt + \int_{T_1+T_2}^{T_3} V_0 dt$$


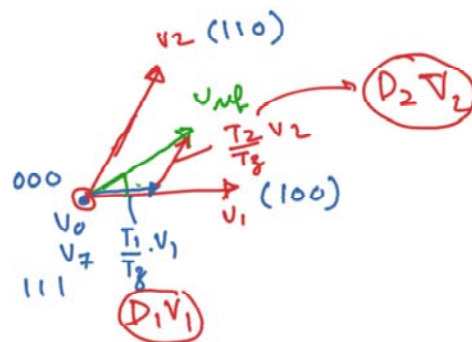
$f = 50\text{Hz}$   
 $20\text{ms}$

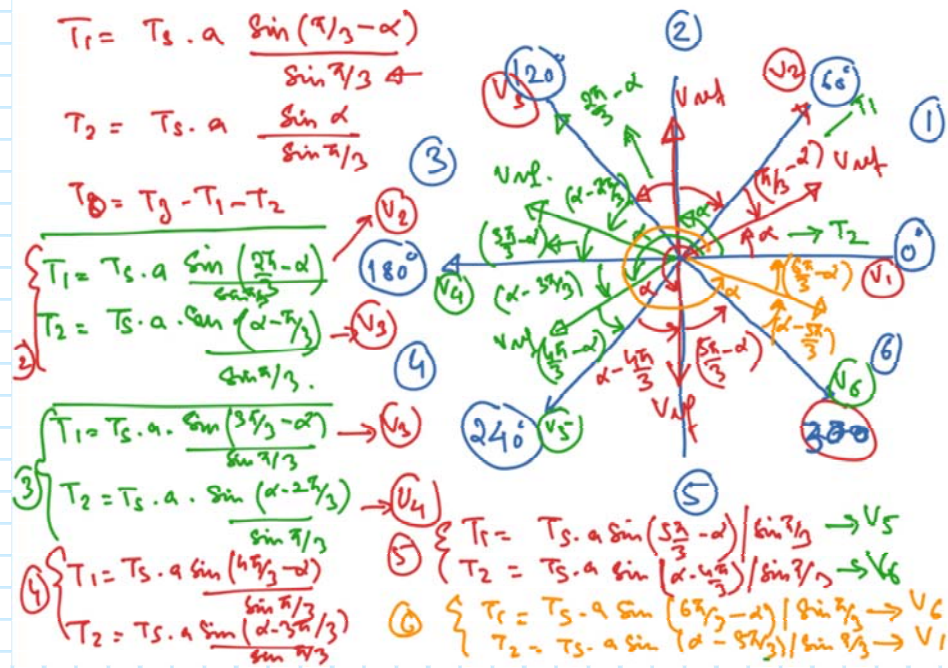
$$T_2 = T_s \cdot a \frac{\sin \alpha}{\sin \pi/3}$$

$$T_1 = T_s \cdot a \frac{\sin(\pi/3 - \alpha)}{\sin \pi/3}$$

$$a = \frac{|\vec{V}_{ref}|}{\frac{2}{3} V_{dc}}$$

$$T_0 = T_3 - T_1 - T_2$$





$$T_1 = T_s \cdot a \cdot \frac{\sin(n\pi/3 - \alpha)}{\sin \pi/3}$$

$$T_2 = T_s \cdot a \cdot \frac{\sin(\alpha - (n-1)\pi/3)}{\sin \pi/3}$$

$$T_0 = T_s - T_1 - T_2 \quad n = \text{sector number}$$

$T_0 =$  time for  
 null vectors  
 =

$T_1$ : time for first vector of  
 the sector in anti clock  
 wise direction.

$T_2$ : time for second vector.

