

1 Cheat Sheet for EE463

1.1 Trigonometric

$$\begin{aligned}\sin A \cos B &= \frac{1}{2} [\sin(A - B) + \sin(A + B)] \\ \sin A \sin B &= \frac{1}{2} [\sin(A - B) - \sin(A + B)] \\ \cos A \cos B &= \frac{1}{2} [\cos(A - B) + \cos(A + B)]\end{aligned}$$

1.2 Diode

Full Bridge Rectifier Average Output V_s :rms value of source voltage

$$V_{av} = \frac{3\sqrt{6}V_s}{\pi} - \frac{3\omega L_s I_d}{\pi}$$

1.3 Thyristor

α : firing angle

$$V_{av}(\alpha) = \frac{3\sqrt{6}V_d}{\pi} - \frac{3\sqrt{6}V_d}{\pi} \cdot (1 - \cos(\alpha))$$

At the output I_d

$$\cos(\alpha + u) = \cos(\alpha) - \frac{2\omega L_s I_d}{\sqrt{2}V_s}$$