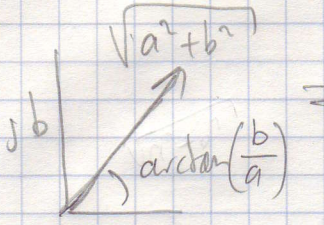
$$\Rightarrow b_{dm} = \frac{\alpha \cdot a_i e^{j\theta}}{2} \cdot 1 + (1+\Delta)(1+j\theta)$$

$$\cdot 1 + 1 + j\theta + \Delta + \Delta j\theta = (2+\Delta) + j\theta(1+\Delta)$$



$$\Longrightarrow \cdot \sqrt{(2+\Delta)^2 + \theta^2(1+\Delta)^2} \cdot e^{j\frac{\theta(1+\Delta)}{(2+\Delta)}}$$

($\theta^2 \ll 1$, $\frac{\theta}{2} \ll 1$)

$$\approx \cdot \sqrt{(2+\Delta)^2} \cdot e^{j\frac{\theta}{2}}$$

$$\Rightarrow b_{dm} = \frac{\alpha \cdot a_i \cdot e^{j\theta}}{2} \cdot (2+\Delta) \cdot e^{j\frac{\theta}{2}}$$

& $b_{cm} = \frac{\alpha_i a_i \cdot e^{j\theta}}{2} \cdot 1 - (1+\Delta)(1+j\theta) = 1 - 1 - j\theta - \Delta - j\theta\Delta =$

$$= \frac{\alpha \cdot a_i \cdot e^{j\theta}}{2} \cdot (\Delta + j\theta(1+\Delta))$$

$$\cdot \sqrt{\Delta^2 + \theta^2(1+\Delta)^2} \cdot e^{j\frac{\theta(1+\Delta)}{\Delta}}$$

($\theta^2 \ll 1$, $\frac{\theta}{\Delta} \ll 1$)

$$\approx \sqrt{\Delta^2+\theta^2} \cdot e^{j\frac{\theta}{\Delta}}$$

$$CMRR = \left|\frac{b_{dm}}{b_{cm}}\right| = \sqrt{\frac{(2+\Delta)^2 + \theta^2(1+\Delta)^2}{\Delta^2 + \theta^2(1+\Delta)^2}} \approx \sqrt{\frac{(2+\Delta)^2}{(\Delta^2+\theta^2)}} = \frac{2+\Delta}{\sqrt{(\Delta^2+\theta^2)}}$$

Amplitude diff: $1+\Delta = \text{faktor} \Rightarrow$ **1dB** power diff $= 1.25 \rightarrow \Delta = 0.25$

Phase diff: radians $= \frac{\text{degr.}}{360} \cdot 2\pi \Rightarrow$ **10°** $= 0.174$ rad.

$$CMRR[dB] = 20 \cdot \log\left|\frac{b_{dm}}{b_{cm}}\right| = 10 \cdot \log\left[\frac{(2+\Delta)^2}{\Delta^2+\theta^2}\right]$$

NB ellipse: $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$. (halvakser a og b)

cirkel: $\sin^2\varphi + \cos^2\varphi = 1$

simultaneous Δ_{max} & θ_{max} ↑ worst spot

$$20\log\left(\frac{2.25}{\sqrt{0.25^2 + 0.174^2}} = \frac{2.25}{\sqrt{0.09}} = 7.4\right) = 17.4\,dB$$