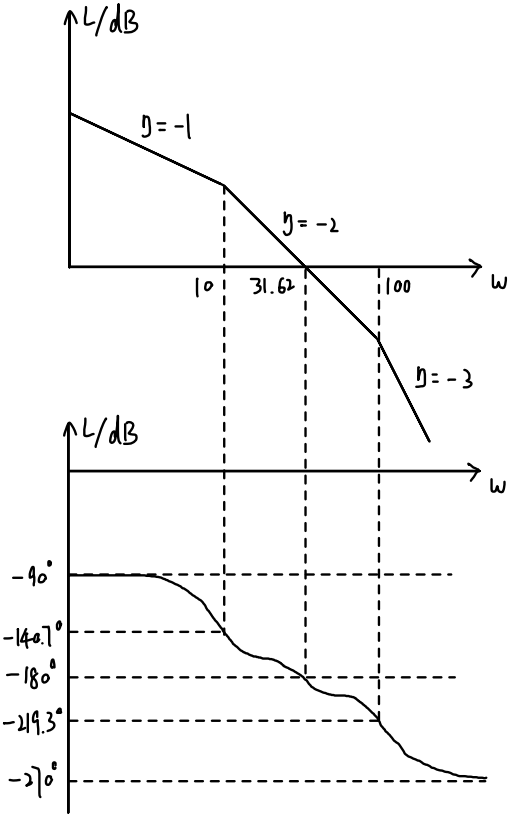


$$20\lg\frac{100}{10} = 40\lg\frac{\omega_c}{10}$$

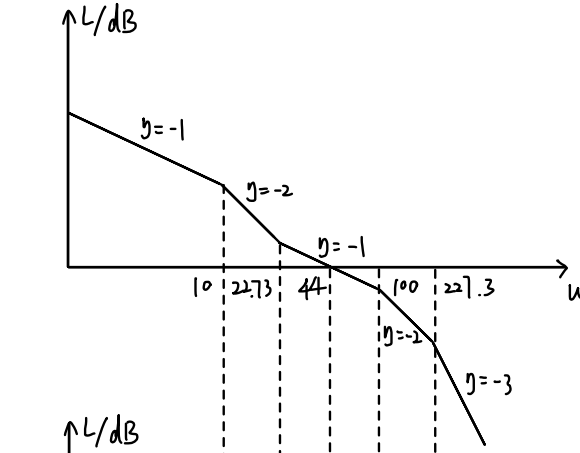
$$\omega_c = 31.62$$

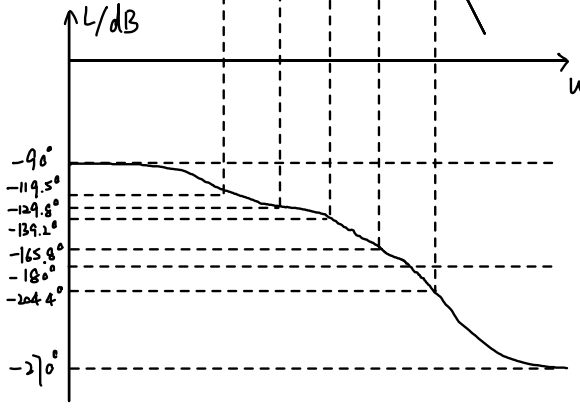
$$\theta = -90^\circ - \arctan(0.1\omega) - \arctan(0.01\omega)$$

$$-140.7$$

$$-180$$

$$-219.3$$





$\theta = -90 + \arctan(0.044w) - \arctan(0.0044w) - \arctan(0.1w) - \arctan(0.01w)$

-139.2

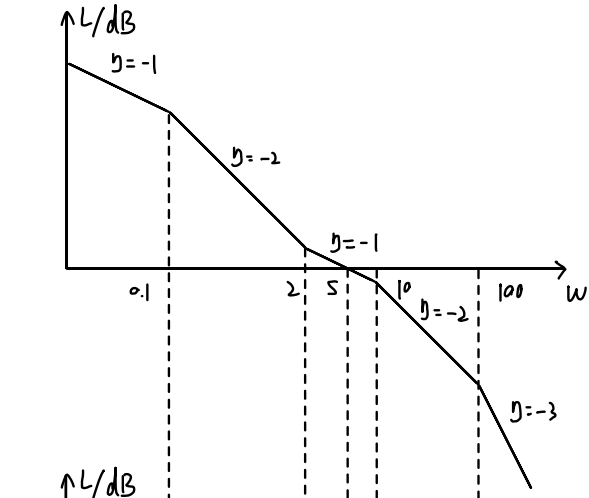
-119.5

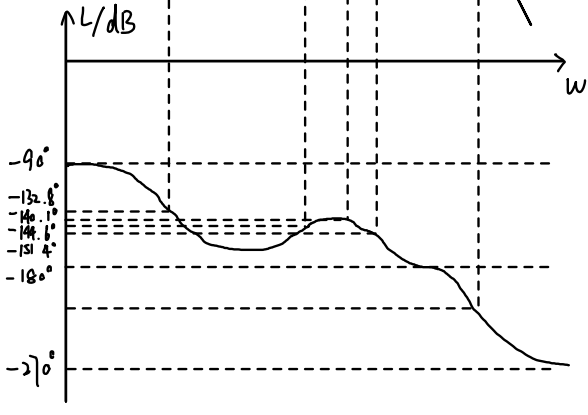
-129.8

-165.8

-294.4

$$20\lg\frac{100}{10} = 20\lg\frac{w_c}{22.73} + 40\lg\frac{22.73}{10}$$





$$20\lg\frac{100}{0.1} = 40\lg\frac{2}{0.1} + 20\lg\frac{w_c}{2}$$

$-90 - \arctan(0.5w) - \arctan(10w) - \arctan(0.1w) - \arctan(0.01w)$

-140.1

-132.8

-144.6

-151.4

-220.4