

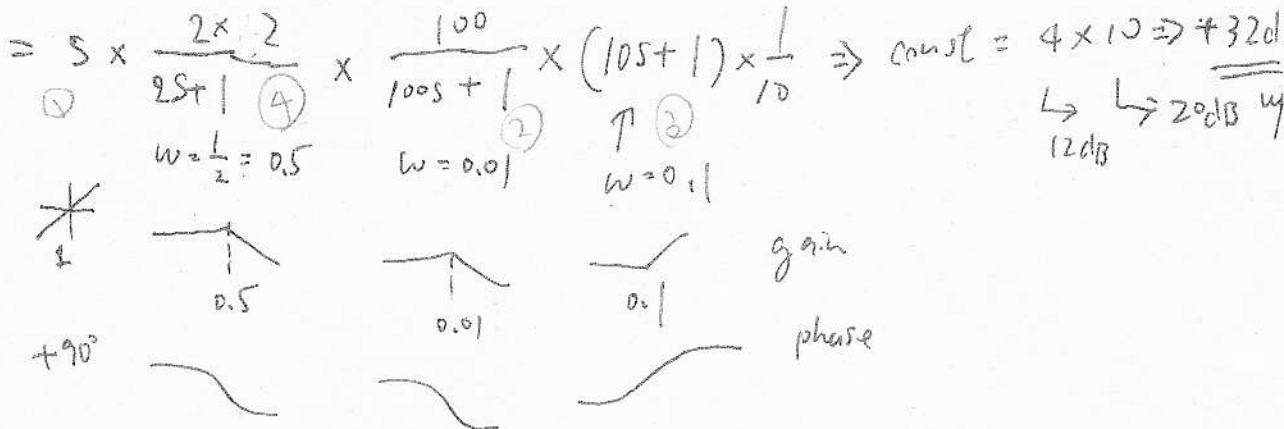
$$f_{10} 4 \approx 0.6$$

$$20 \times 0.6 = 12$$

Name _____

[1] $G = \frac{2 \cdot s(s+0.1)}{(s+0.5)(s+0.01)}$ [2] $G = \frac{s}{(s+1)(s+2)}$ vector locus

Bodechart



[2] $G(s) = \frac{s}{(s+1)(s+2)}$, $G(j\omega) = \frac{j\omega}{- \omega^2 + 3j\omega + 2} = \frac{j\omega}{(2-\omega^2) + 3j\omega} = \frac{(2-\omega^2) - 3j\omega}{(2-\omega^2)^2 + 9\omega^2} \cdot j\omega$

ω	X	Y
0	$\frac{0}{4} = +0$ faster	+0
1	$\frac{3}{10} \approx 0.3$	$\frac{1}{10}$
$\sqrt{2}$	$\frac{1}{3} \approx 0.33$	0
∞	$\frac{3}{\infty} = +0$ faster	$\frac{-1}{\infty} = -0$

$= \frac{+3\omega^2}{(2-\omega^2)^2 + 9\omega^2} + j \frac{(2-\omega^2)\omega}{(2-\omega^2)^2 + 9\omega^2}$

$= \frac{3}{\frac{4}{\omega^2} - 4\omega^2 + 9} + \frac{\frac{2}{\omega^2} - 1}{\frac{4}{\omega^3} - \frac{4}{\omega} + \omega + \frac{9}{\omega}}$

$\omega = \sqrt{2}, Y = 0$

$X = \frac{6}{18} = \frac{1}{3}$

$\frac{2-\omega^2}{\frac{4}{\omega} - 4\omega + \omega^3 + 9}$

$\omega \rightarrow \infty \Rightarrow \frac{2}{\omega} = 0$

