

UnCompensated
Compensator (s+0.1)/s
Combined

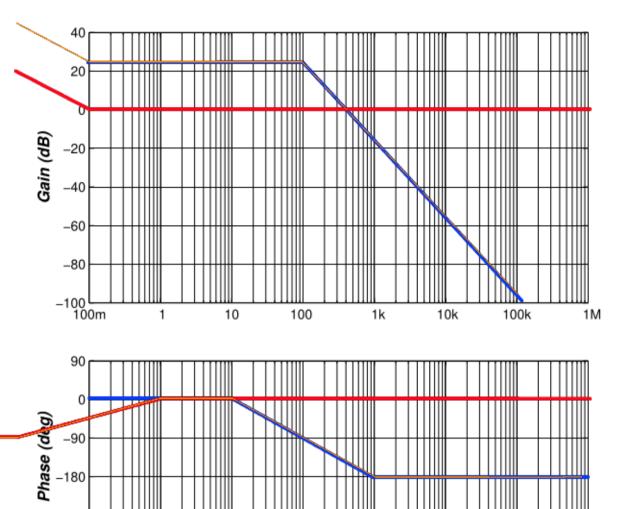
100k

1M



-270

−360 L 100m



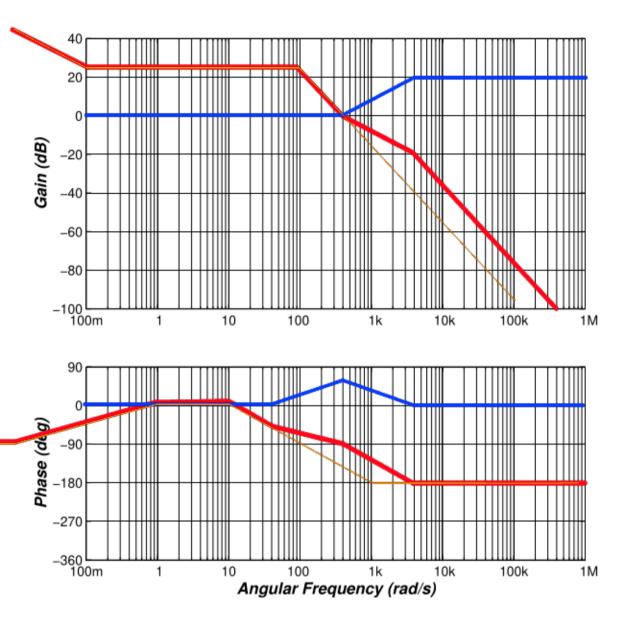
Angular Frequency (rad/s)

10

Combined

Lead Compensator (s+100)/(s+1000)

Compensated

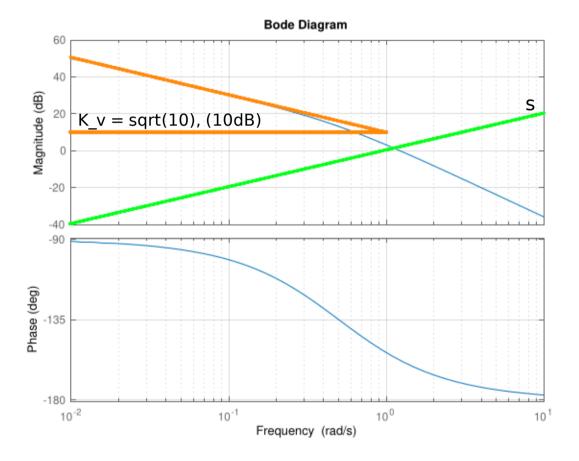


Type: 1

Steady State Error

Step Input: 0 Given it's a type 1 system. Ramp Input: $1/K_v = 1/sqrt(10) = 0.316$

Parabolic Input: Infinite

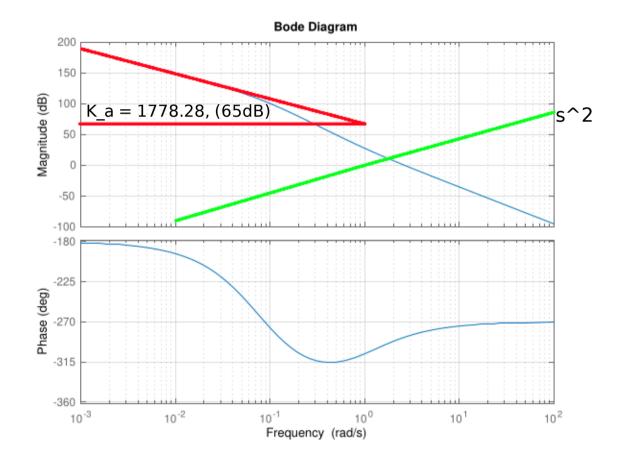


Type: 2

Steady State Error

Step Input: 0

Ramp Input: 0 Parabolic Input: $1/K_a = 1/1778.28 = 5.6 * 10 ^ -4$

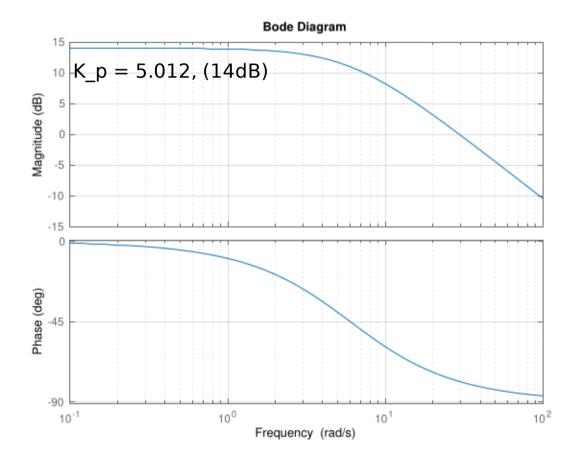


Type: 0

Steady State Error

Step Input: $1/(1 + K_p) = 1/(1+5.012) = 0.16634$

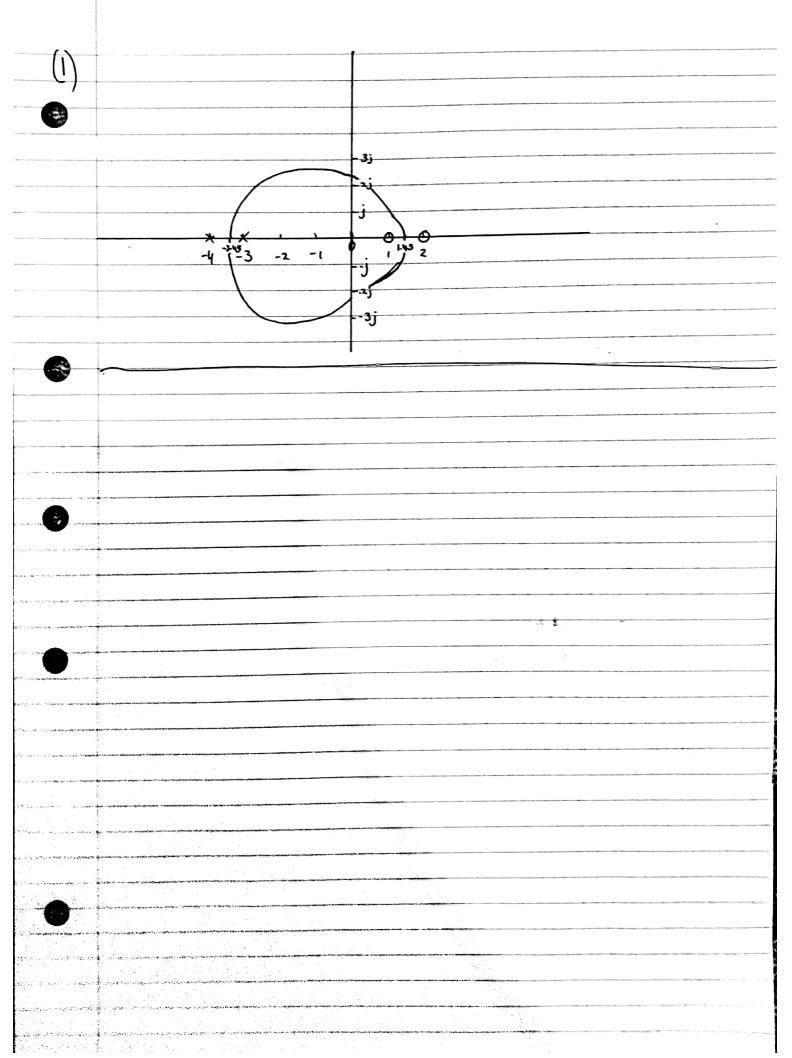
Ramp Input: Infinite
Parabolic Input: Infinite

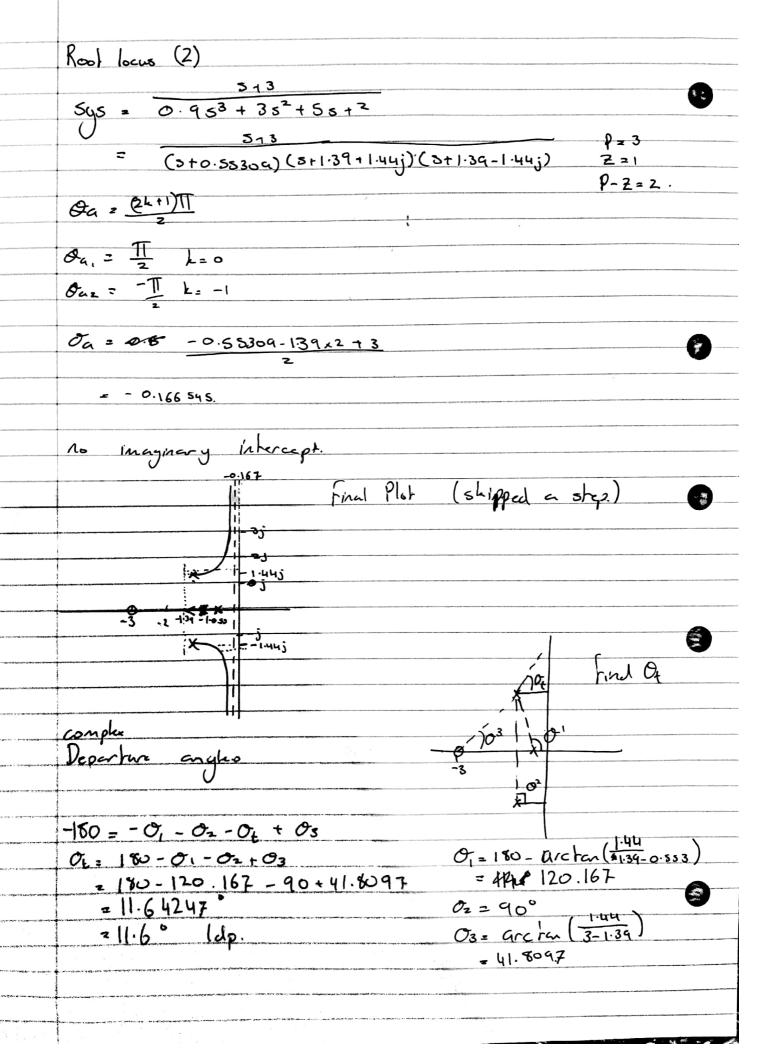


•	Root locus		
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1	52-35+2 52+75+12	(5-2)(5-1)	Zeroes at on 1,2
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	0 .	40	and the second s
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	Break away/inpoints	- Algebrai	- method
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	$\sum_{i=1}^{n} \frac{1}{\partial_{i} \cdot -2i} = E\overline{a}$	Σ σ -P	
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9			
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			-3 4)(05+3)(05+4)
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	(206° = 406 + 700-) 2 6 3 406 - 1406	1)(05-1) = (06-2006 1)(06-1) = (206.606 =2012-1061414 = 118062+	+306-9)(06+4) 306-9)(06+4) 306-1206-
	(206° = 406 + 700-) 2 6 3 406 - 1406	1)(05-1) = (06-2006 1)(06-1) = (206.606 -2012-1061414 = 118062+ 3 0 = 10062+ 2	+306-9)(06+4) 306-906+8006-11206- 306-50
	(206° = 406 + 700-) 2 6 3 406 - 1406	1)(05-1) = (06-2206 1)(06-1) = (206,606 -2012 - 2061414 = 118062+ 3 0 = 10062+ 2 = 062+ 206	+306-9)(06+4) 306-906+8006-11206- 306-50
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We only care about the numeratur here and it's the same Quadrate in the algebraits method a state I'm going to Ship to the answer O= -3.45 or 1.45 Departing on the function, the derivative method can be more conflicted. I personally find it easier as it's got the pendents seem expanded. Maginary crossing Ponts. Plack point 1.45 +3.45 sections averaging of breek in fewery well D 2.4 \$5; arctar (-120) rarcher (-120) at \$2200 - 4-3 12 - arctar (1800) - archar (1200) at \$2200 - 4-3 12 - arctar (1800) - archar (1200) at \$2000 - 4-3 12 - arctar (1800) - archar (1800) at \$1000 - 4-3 10 - 170.76 go laver to 2.2. yint = 404 111.65 Sub above 2.45 for 22. go up to 2.25 yint = -180.5.	gyppesiji i i samilija i ninghumbaniy (gilija i i	The state of the s
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Depending on the function, the devicative method can be more complicated. I personally find it easier as its got the breakets seem expanded. Manginery crossing Pants. 145 + 3.45 sebitemy energy age of break in family well 2.485; exertion (-2.10) et 82 eros -4-3 12 erotan (2.10) - archen (2.10) et 82 eros -4-3 12 erotan (2.10) - archen (2.10) personal 2.10.76 go laser to 2.2. yint = 484 [11.65] go up to 2.25 yint = -179 -179.368 go down to 2.25 yint = -180.5.	ng agaman di termenia sahiji saja dimengan mengalah karang senjah yan	
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D 2.4 & 5; arctan (-1/210) rarchen (-1/210) 24 & 2 = 100 - 10 - 10 1 2 - arctan (1/2100) - arctan (1/2100) Palco2.40) = -170.76 go laser to 2.2. yint = 4764 [11.65 sub above 2.45 for 2.2. go up to 2.25 yint = -179 -179.368 go down to 2.225 yint = -180.5.		
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		go up 18 2:23 year = 179.368
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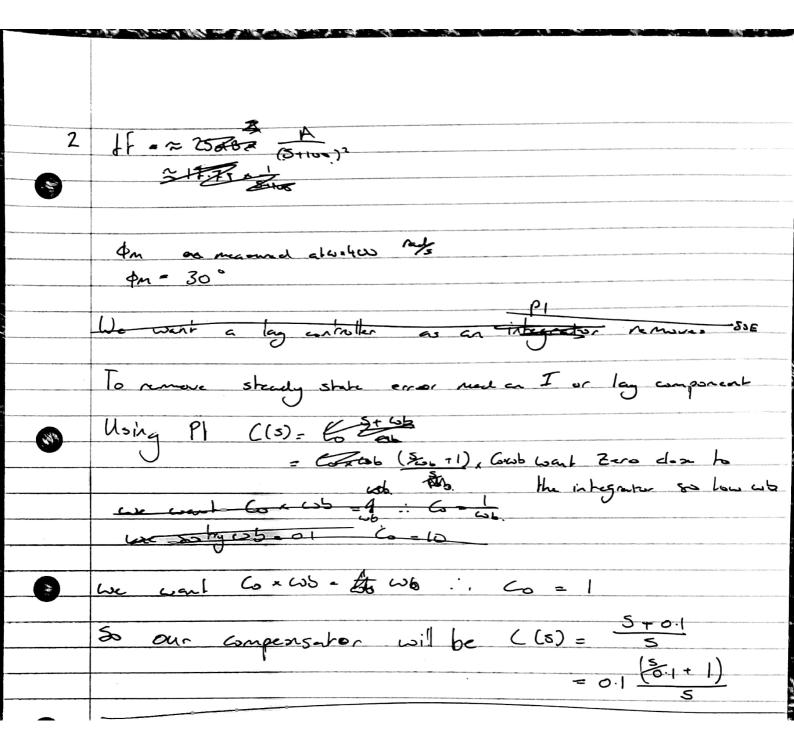
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	The second secon	





	Book Ploto 1 at w=0
eq 3	$\frac{5+30}{5^{2}+25} = \frac{30}{2} \cdot (5+36) \qquad \text{gain} = 20 \log 30$ $= 29.54 \times 48$
	5-1 gain = 0 (S+2)-1 gain = -20 log 2
	Stability Fotal gain = 2010, 15 attacky. additional = 23.5,1B
	Atrans of the second of the se
	PM # \$ 60° is shable.
<u>}</u>	

eq 4	106 106	106 gain = 20 log 106
r	53+162+643 S(5+162+64)	= 40.5 aB ONBAILUR
	s(s**+8)2	5-1 gain = OdB 2018 solloff
	S(3** + B)	(5+8)-2 Gain = -40 log 8 4028 rollof
	= 106 1 64 S(3 11)2	5-1 gain = 0 dB 2018 2018 2018 2018 2018 2018 2018 2018
	Shability	total gain = 20 log 106
		total gain = 20 log 106 additional = 4.38 dB.
	PM 2 270° : is stable reading of plut	
	reading of plut	
	<i>d</i> '	
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you can use the lead controller to make a tump in the phase that ranges between 0-90° which can be placed around your phase mayin to raise the phase at that point and increase the phase maying the also raises the response after the selected frequency increasing dry aft for a bit and to raising the gain at the phase maying the gain at the phase maying the unity coming point.

We will add a Zero at a = 100 and a pole at a zero at a zero at a pole at a zero at a zero at a pole at a zero at a zero at a pole at a zero at a zero at a pole at a zero at a ze