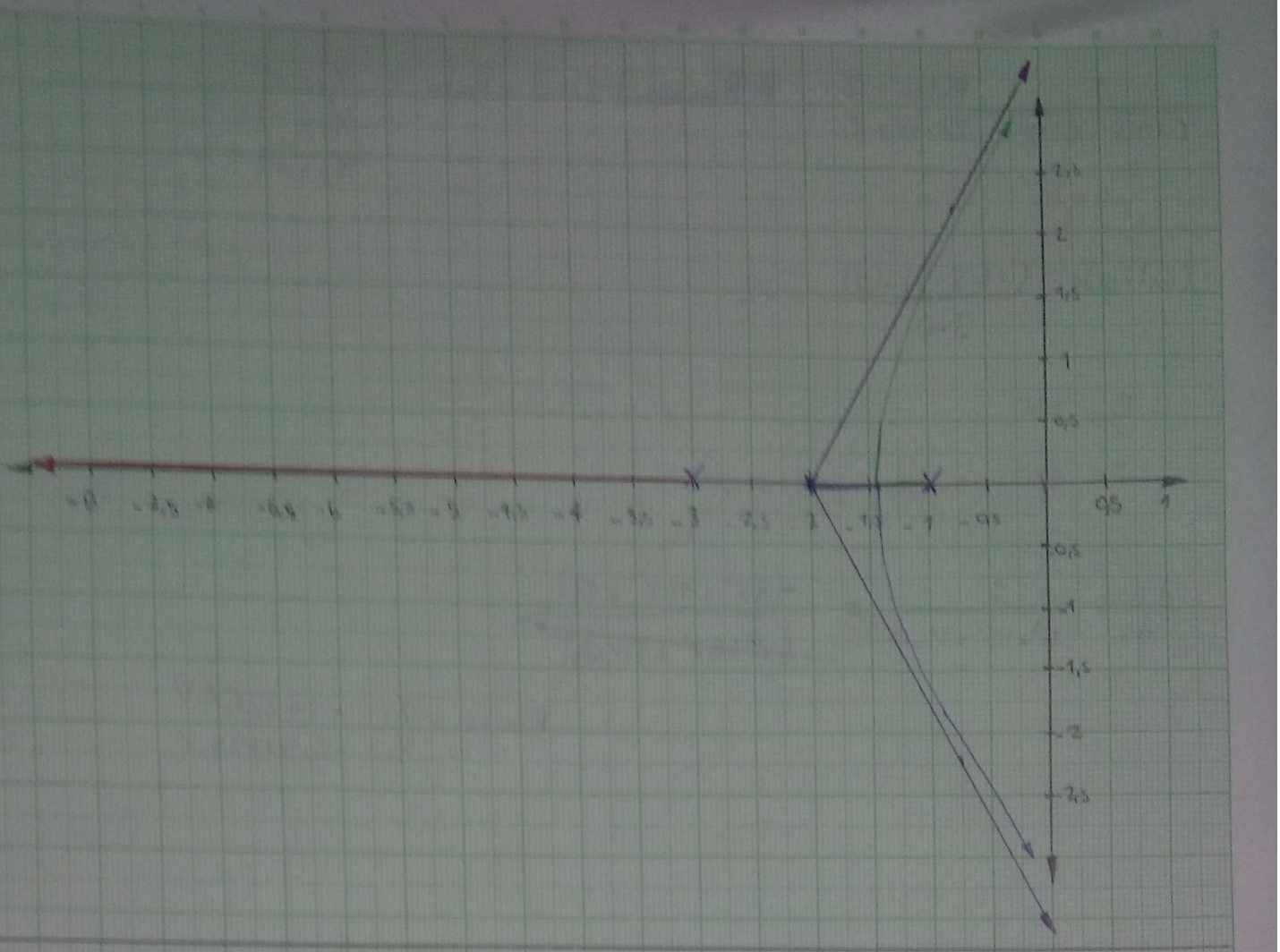
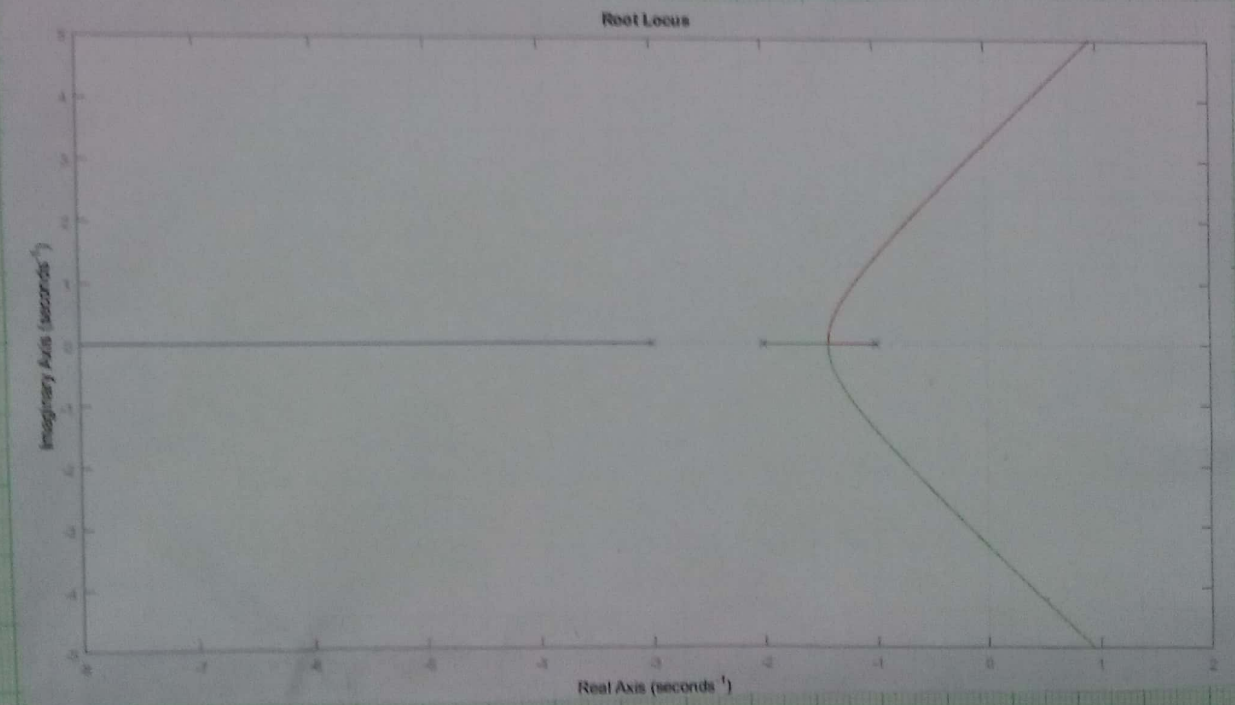




Institución	Asignatura	Profesor	Curso	Fecha
	Tema	Alumno	Código No.	Nota

$\frac{1}{(s+1)(s+2)(s+3)}$ Polos = 3 Zeros = 0 $\#Ramas = 3-0=3$ Roots = $X_1 = -1$, $X_2 = -2$, $X_3 = -3$

$Centroide = \frac{(-1-2-3)-(0)}{3-0} = -2$

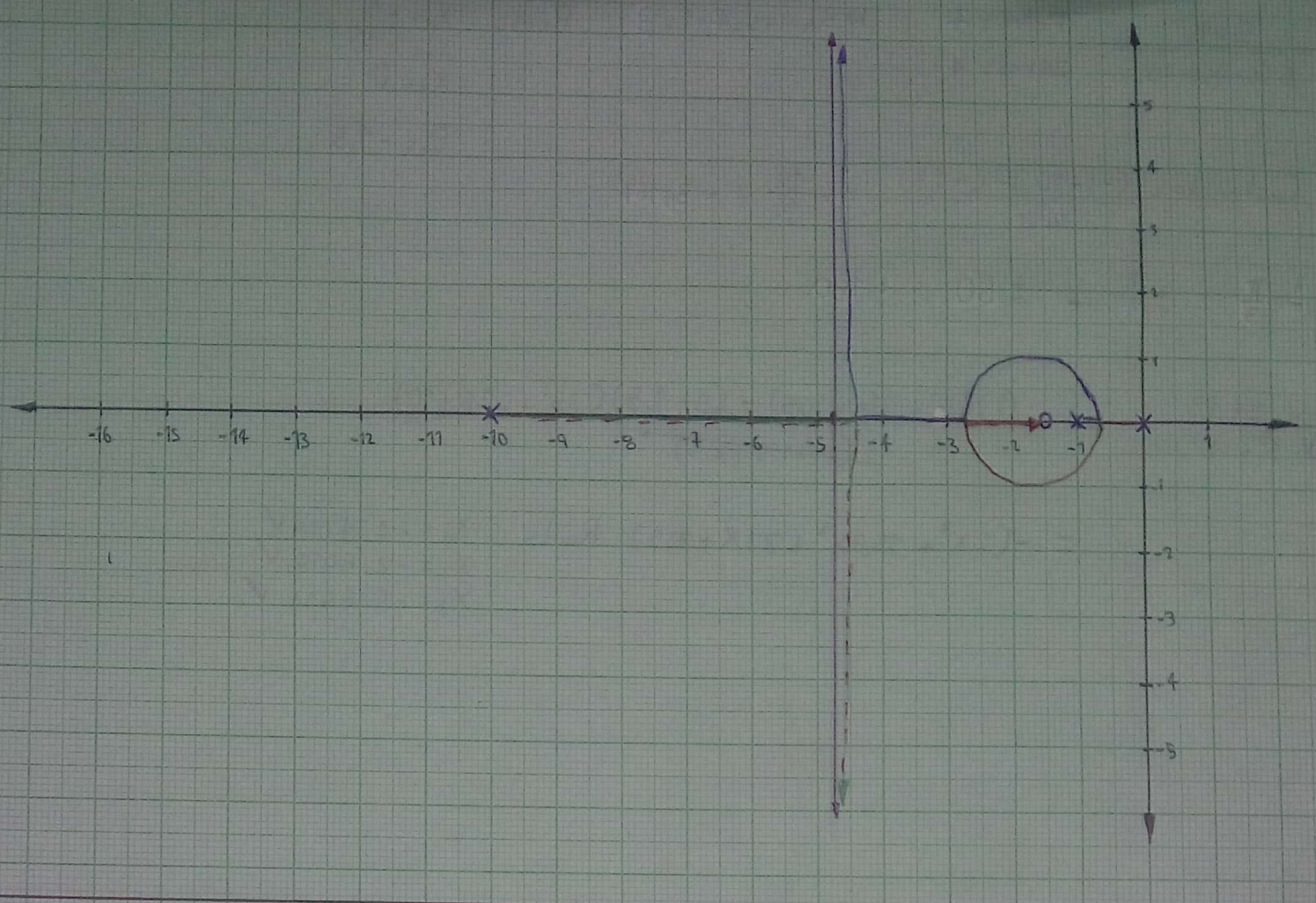
$\pm \frac{\pi}{3} = \pm 60$

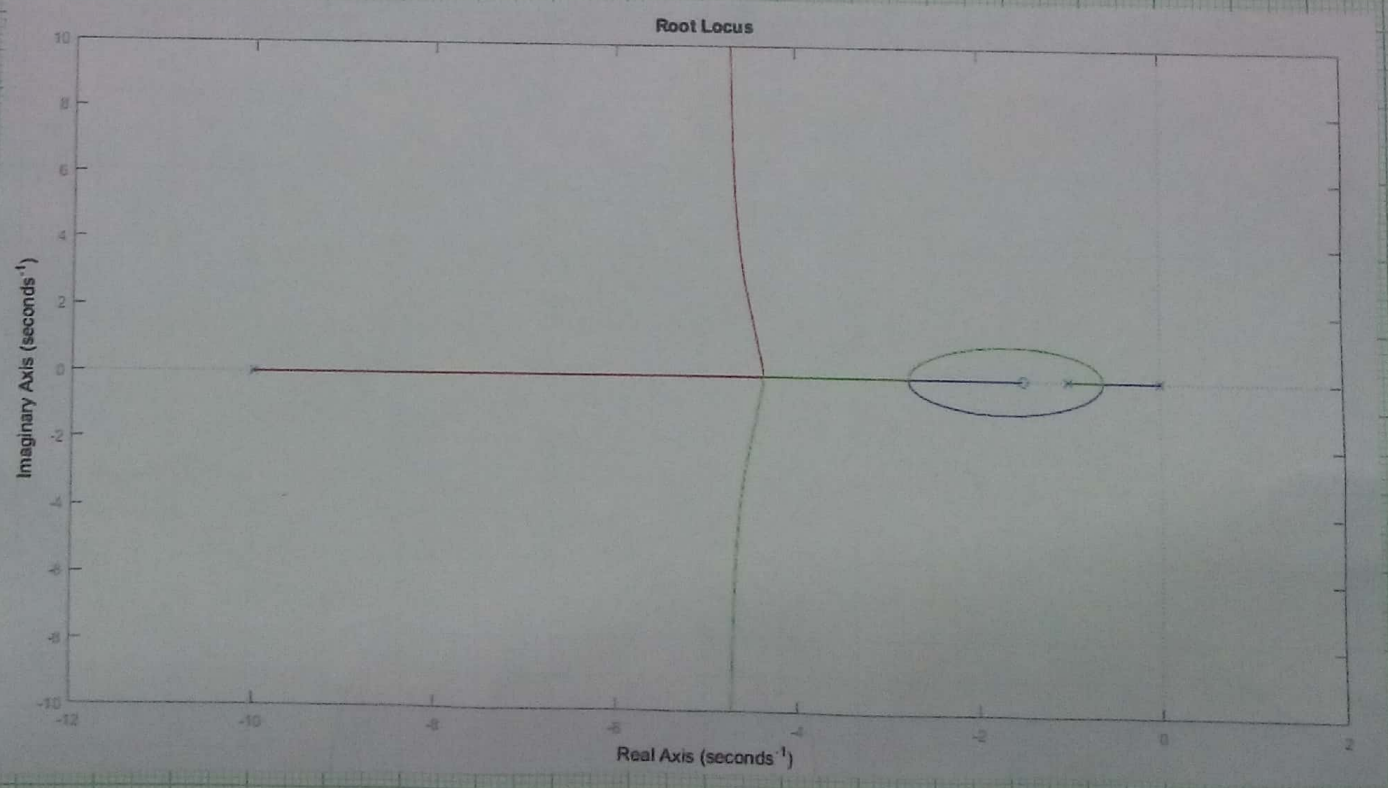
$\pi = 180$

$\frac{d\,G(s)}{ds} \quad \frac{1}{s^3+6s^2+11s+6} = \frac{-(3X^2+12X+11)}{(X^3+6X^2+11X+6)^2}$

Roots = $X_1 = -1,42264$ ✓

$X_2 = -2,57735$ ✗





$$\frac{s^2-2s+2}{(s+2)(s+4)(s+5)(s+6)}$$

Polos = 4
Zeros = 2

Ramas = 4 - 2 = 2

Roots $X_1 = -2$
$X_2 = -4$
$X_3 = -5$
$X_4 = -6$

$O_1 = 1+i$
$O_2 = 1-i$

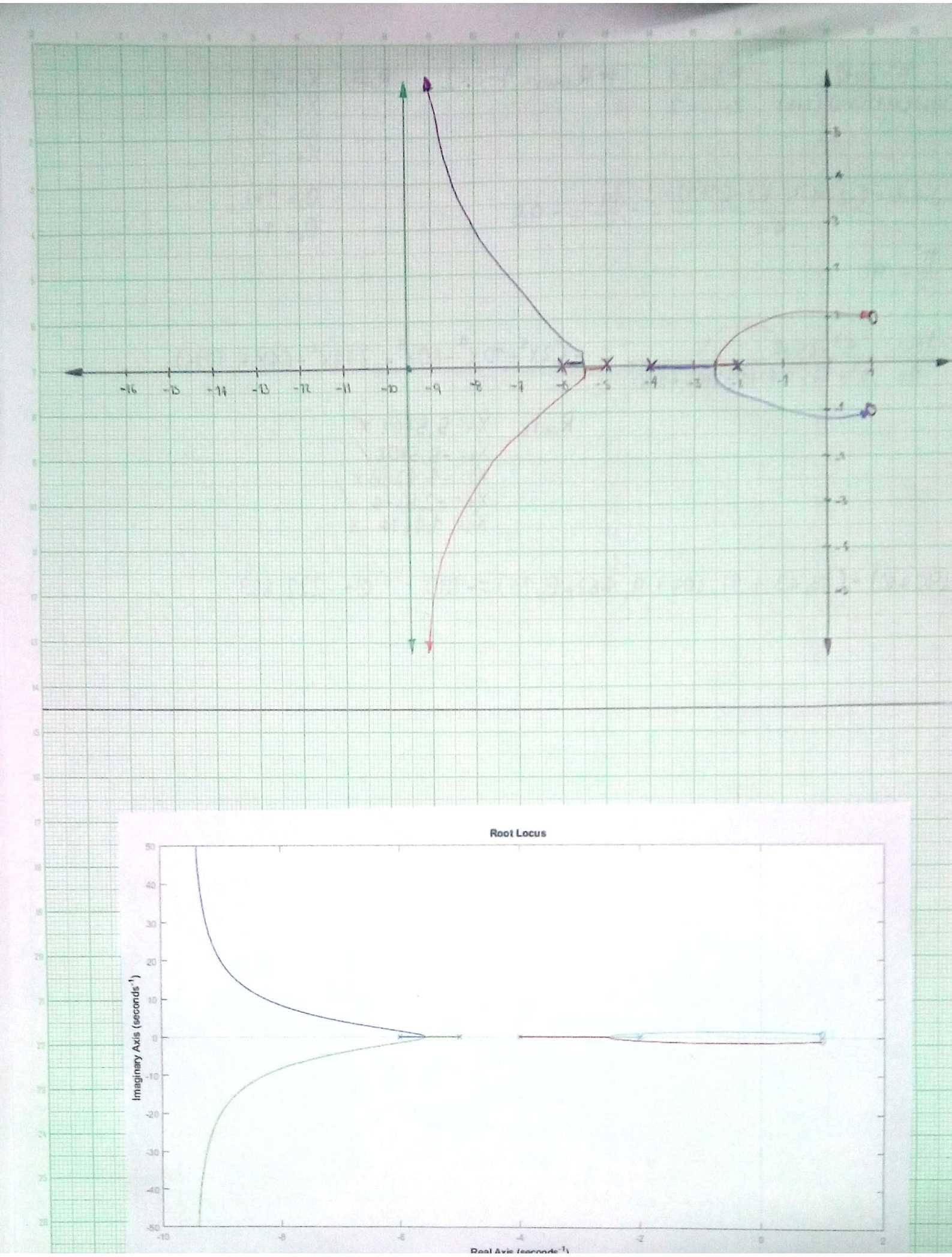
$$\text{Centroide} = \frac{(-2-4-5-6)-(1+1)}{4-2} = -\frac{19}{2} = -9,5$$

$$\frac{\pi}{2} = 90$$

$$\frac{d\,G(s)}{ds}\,\frac{s^2-2s+2}{s^4+17s^3+104s^2+268s+240} = -(2x^5+10x^4-60x^3-374x^2-64x+1016)$$

Roots $X_1 = 5,5702$ ✗
$X_2 = -5,5702$ ✓
$X_3 = -4,4288$ ✗
$X_4 = -2,5274$ ✓
$X_5 = 1,4614$ ✗

$$(90+\emptyset)-(18,43+11,309+9,462+8,13) = -180 \qquad \emptyset = -222,669$$



$\frac{S+1,5}{S(S+1)(S+10)}$ Polos = 3 # Ramas = 3-1 = 2 Roots $X_1 = -1$
zeros = 1 $X_2 = -10$
$X_3 = 0$

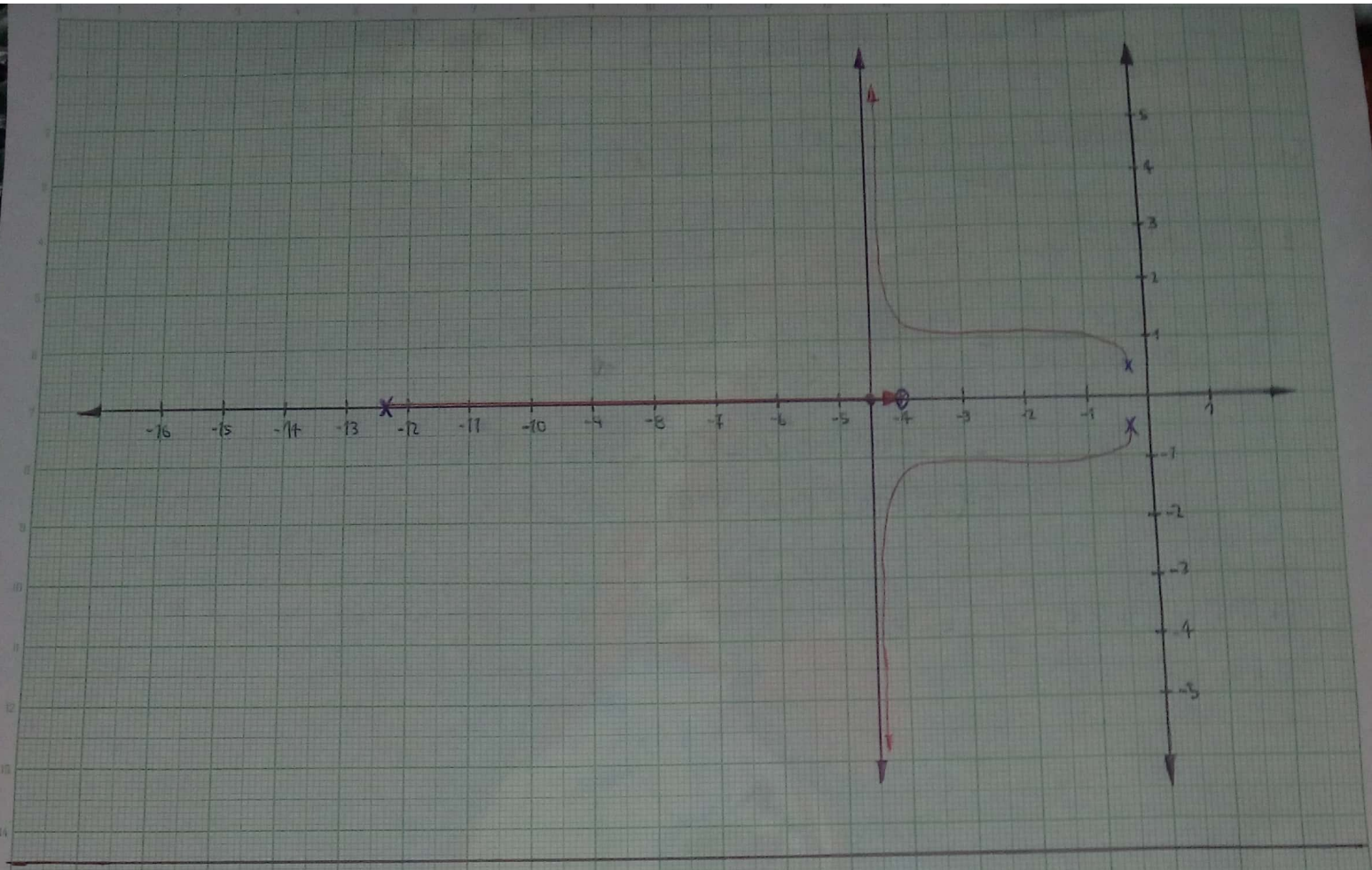
$O_1 = -1,5$

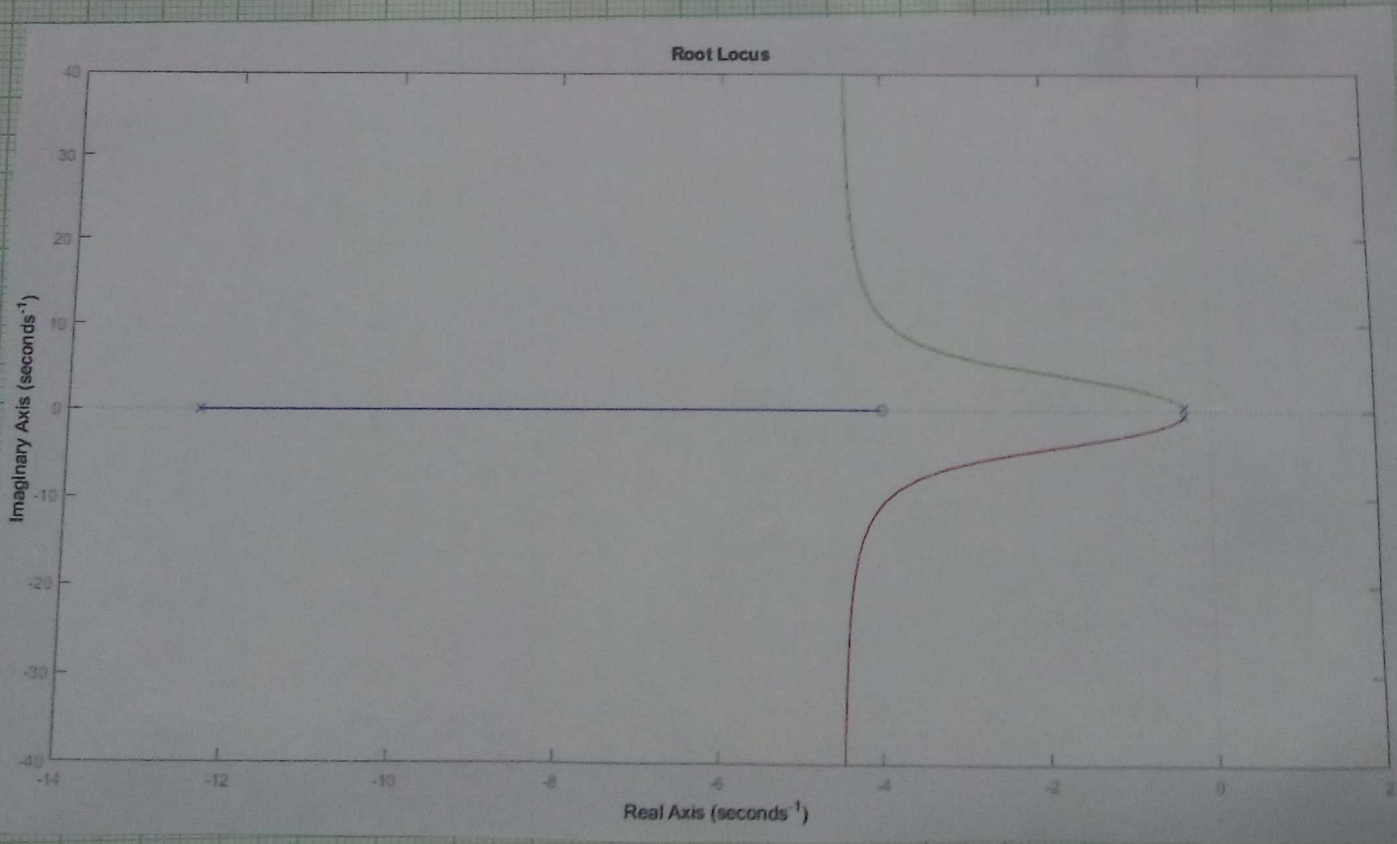
$$\text{Centroide} = \frac{(-1-10)-(-1,5)}{3-1} = -\frac{19}{4} = -4,75$$

$$\pm\frac{\pi}{2} = \pm 90$$

$$\frac{d(G(s))}{ds}\frac{S+1,5}{S^3+11S^2+10S} = \frac{(1)(S^3+11S^2+10S)-(S+1,5)(3S^2+22S+10)}{(S^3+11S^2+10S)^2}$$

$$= -(2X^3+15,5X^2+33X+15,5)$$ Roots $X_1 = -4.4004$ ✓
$X_2 = -2,6958$ ✓
$X_3 = -0,6532$ ✓





$$\frac{S+4}{S^3+13S^2+8S+4}$$

Polos = 3 # Ramas = 3 - 1 = 2 Roots $X_1 = -12,38$

Zeros = 1 $X_2 = -0,31 + 0,48i$

$X_3 = -0,31 - 0,48i$

$$\text{Centroide} = \frac{(-12,38 - 0,31 - 0,31) - (-4)}{3-1} = -\frac{9}{2} = -4,5 \qquad 0_1 = -4$$

$$\pm \frac{\pi}{2} = \pm 90$$

$$\frac{d\,G(s)}{ds}\,\frac{S+4}{S^3+13S^2+8S+4} = \frac{(1)(S^3+13S^2+8S+4) - (S+4)(3S^2+26S+8)}{(S^3+13S^2+8S+4)^2 \to 1}$$

$$= S^3 + 13S^2 + 8S + 4 - (3S^3 + 38S^2 + 112S + 32)$$

$$= -(2S^3 + 25S^2 + 104S + 28)$$

Roots

$X_1 = -6,1056 - 3,3459i$ X

$X_2 = -6,1056 + 3,3459i$ X

$X_3 = -0,2888$ X

$$(7,411) - (90 + \varnothing + 2,277) = -180$$

$$\varnothing = 95,134$$