ENG 1C03 Lab
Week 11 Gear
Train Modelling Version E

Student Name: Prakhar Garg
Student Number: 1204351
Mac ID: gargp2

Part B

$(X_7 + 7) * 1750$ RPM
=(1+7)*1750
=14000RPM

Part C

$D_A = (X_6 + 21) * 4$ mm
= (5+21)*4mm
=104mm
$D_B = (X_5 + 14) * 10$ mm
=(3+14)*10mm
=170mm

Part D

$GR_{CD} = (X_4 + 5)*(X_3 + 4)$
=(4+5)*(0+4)
=36

Part E

$Z_E = (X_3 + 75)$
=(0+75)
=75
$Z_F = (X_2 + 30)$
=(2+30)
=32

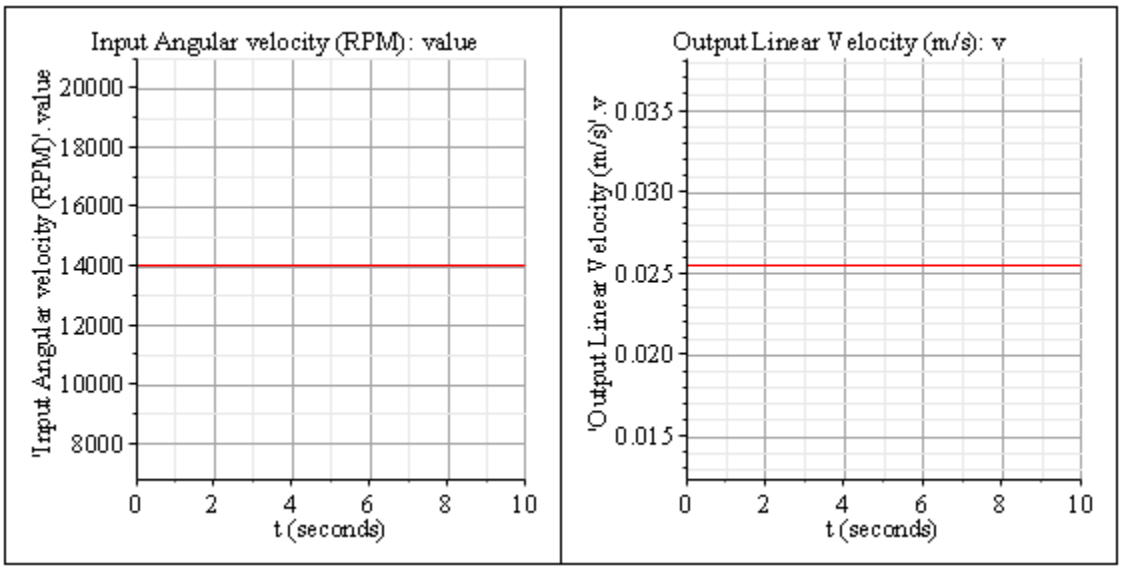
Hand Calculations

ACP (px) of 2.5 mm.

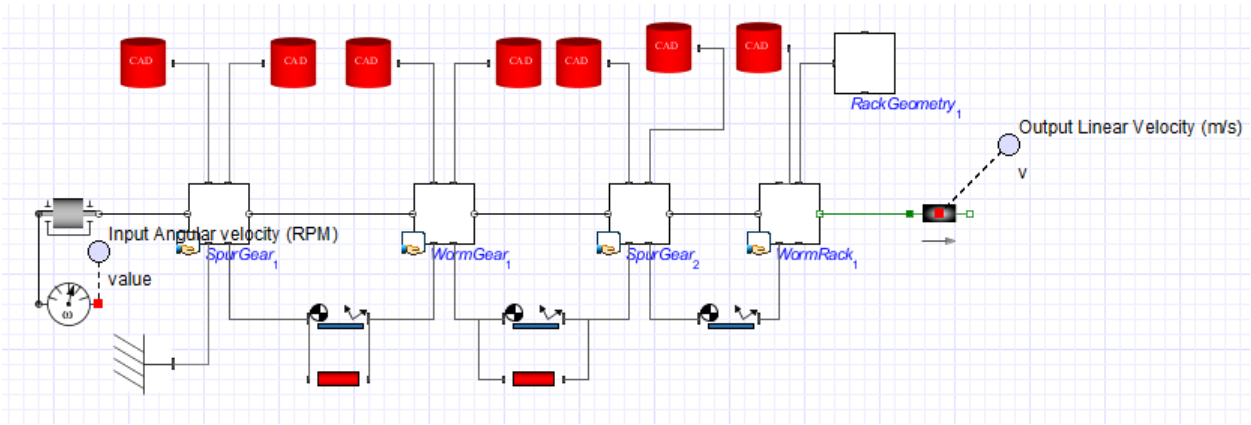
Gear	Module (mm)	Diameter (mm)	Teeth	Gear Ratio	Velocity(RPM)
A	2	104	57	0	14000
B	2	170	85	85/57 = 1.49	9388.2353
C	Tan Mod = 3mm	--	1	85/57 = 1.49	9388.2353
D	3	108	36	85/57*36 = 53.68	260.7843
E	2	150	75	85/57*36 = 53.68	260.7843
F	2	64	32	85/57*36*32/75=22.91	611.2132

Linear velocity = angular velocity * ACP
= 611.2132RPM* 2.5mm
= 611.2132RPM (1M/60s)* 2.5mm(1m/1000mm)
= 0.025467m/s

Results:



Maple Sim 2D



Maple Sim 3D