"Turbo"
"HW2 P5"
"Zhaoyi Jiang(.1364)"

"Given"
u=225[m/s]
c2=400[m/s]
alpha_2=68[degree]
beta_3=-58[degree]

"Mean R"
r=225/(18000*2*pi/60)

"The angle of the relative velocity entering the rotor"
cz2=c2***cos**(alpha_2)
cu2=c2***sin**(alpha_2)
wu2=cu2-u
wz2=cz2
beta_2=**arctan**(wu2/wz2)

"The magnitude of the relative velocity entering the rotor"
wz2=wz3
w3=wz3/**cos**(beta_3)

"The magnitude of the axial velocity leaving the rotor"
cz2=cz

"Work delivered"
cz2=cz3
wu3=w3***sin**(beta_3)
cu3=wu3+u
alpha_3=**arctan**(cu3/cz3)
c3=(cz3^2+cu3^2)^0.5
W=u*(c2***sin**(alpha_2)-c3***sin**(alpha_3))***convert**(m,km)

SOLUTION

Unit Settings: SI C bar kJ mass deg

α_2 = 68 [Degree]	α_3 = -5.64 [degree]	β_2 = 44.23 [degree]
β_3 = -58 [Degree]	c2 = 400 [m/s]	c3 = 150.6 [m/s]
cu2 = 370.9 [m/s]	cu3 = -14.8 [m/s]	cz = 149.8 [m/s]
cz2 = 149.8 [m/s]	cz3 = 149.8 [m/s]	r = 0.1194 [m]
u = 225 [m/s]	W = 86.78 [kj/kg]	w3 = 282.8 [m/s]
wu2 = 145.9 [m/s]	wu3 = -239.8 [m/s]	wz2 = 149.8 [m/s]
wz3 = 149.8 [m/s]		

No unit problems were detected.