Radar Rotation of Mercury
A CLEA, computer lab
Done at Montgomery College, Takoma Park
Dr. Harold Williams, professor

Student's Name:______________________________
Date you took data:_____________________

c=3E8 m/s = $3x10^8$ m/s R_{merc}=2.42E6 m = 2.42 $x10^6$

f=430Mhz = 4.3E8 hz = 4.3 $x10^8$ hz

c/f=6.976E-1 m = 6.976 $x10^{-1}$ m

$2\pi R_{merc}$ =1.5205E7 m = 1.5205 $x10^7$ m

m is meters. s is seconds. hz is herz=cycle/s.

(1day/86,400s)*$2\pi R_{merc}$ =1.759E2 m day/s = 1.759 $x10^2$ m day/s

$\Delta t(s)$	120E-6	210E-6	300E-6	390E-6
$d(m)= c\Delta t/2$				
$x(m)= R_{merc} - d$				
$y(m)=\sqrt{(R_{merc}^2-x^2)}$				
Δf_{left}				
Δf_{right}				
$\Delta f_{total}=(\Delta f_{right} - \Delta f_{left})/2$				
$\Delta f_c=\Delta f_{total}/2$				
$V_0(m/s)= \Delta f_c\, c/f$				
$V(m/s)= R_{merc} V_0/y$				
P(days)= (1day/86,400s)$2\pi R_{merc}/V$				

$\Delta f_{sub\ earth\ pulse}(T=0)$ = __________ $V_{orbital}$ =c ($\Delta f_{sub\ earth\ pulse}$ /f) = ____ _m/s=______ km/s

Average Rotation Period of Mercury P_{rot} = __________days

What Percentage difference from the accepted value of 59 days?
100*(P_{rot} -59)/59 = _________%