

HOME WORK # 2

1. Use one of the Julian date calculators, to prepare a table similar to the table given in the class notes for the Julian dates at the beginning of each year, for the period (2010-2025)
2. What is the Julian date for Noon on October 26, 2015?
3. What is the Julian date for 16:00 UT on December 28, 2020?
4. A new weather research satellite is to be placed in a circular equatorial orbit so that it moves in the same direction as the earth's rotation. Using an active radar system, the satellite will store data on surface barometric pressure and play the data back to a controlling earth station after each trip around the world. The orbit is to be designed so that the satellite is directly above the controlling earth station, once every four hours. The earth station antenna can not receive below 10° above local horizon in any direction. Taking the earth's radius to be exactly 6370 km. and the earth's rotational period to be exactly 24 hours, find the following quantities:
 - a. The satellites angular velocity in radians per second.
 - b. The orbital period in hours.
 - c. The orbital radius in km.
 - d. The orbital height in km.
 - e. The satellite linear velocity in meters per second.
 - f. The time interval in minutes for which the controlling earth station can communicate with satellite on each pass.