The Celestial Sphere and Star Charts

1. Find the star with the RA and Dec given in the left two columns and determine in which constellation the star is located.

R.A.	Dec	Star	Constellation
6 43	-17		
22 56	-30		
7 37	5		
19 29	28		
5 14	46		
18 36	39		
2 17	-3		
16 27	-26		
1 57	89		
12 52	56		
5 13	-8		
5 46	-10		
20 40	45		
7 43	28		
13 22	55		
5 53	7		
11 00	57		

2. Determine the RA and Dec of the stars listed below.

Star Name	Constellation	R. A.	Dec
Aldebaran	Taurus		
Algol	Perseus		
Altair	Aquila		
Bellatrix	Orion		
Betelgeuse	Orion		
Canopous	Carina		
Capella	Auriga		
Castor	Gemini		
Dubhe	Ursa Major		
Procyon	Canis Minor		
Regulus	Leo		
Rigel	Orion		
Spica	Virgo		

3. In what constellation is the *vernal equinox* located?_____

4. In what constellation is the *summer solstice* located?_____

5. In what constellation is the *winter solstice* located?_____

6. In which constellation is the sun located on the date of your birth?_____

7. In which constellation is the *autumnal equinox* located?_____

8. During which months does the sun lie south of the celestial equator?_____

   Note that on any given date, the right ascension of midnight is always 12 hours away from the location of the sun. With this in mind, answer the following questions.

9. What is the R.A. of midnight on March 21? _____

10. Name two bright stars and two constellations that will be near the meridian on March 21.
    _____, _____, _____, _____

    Since the stars and constellations determined above are on the meridian at midnight, then those stars and constellations must have risen approximately at sundown (four hours or so earlier). Let's try it again.

11. What is the R.A. of midnight on April 21? _____

12. Name two bright stars and two constellations that will be near the meridian on April 21.
    _____, _____, _____, _____

13. On April 21, how many hours west of the meridian are the stars and constellations found in question 11? _____

14. Therefore, we can say that on April 21, the stars which rose at sundown on March 21 rise _____ hours (earlier) (later)

16. When does Betelgeuse rise at sunset? _____

17. When does Arcturus rise at sunset? _____

18. At what time does the *vernal equinox* rise on the date of the *autumnal equinox*?_____

In the Planetarium

19. Record the altitude of Polaris above the northern horizon. From the list below select the city from which Polaris would have that altitude.

Altitude of Polaris	**City**

Los Angeles, Seattle, Mexico City, Panama City, Anchorage, Miami

9, 60, 34, 20, 26, 47

20. Star maps such as those which appear in ***Sky and Telescope*** each month depict the sky for the 15th of that month at 9:00 p.m. Suppose you are observing on April 15th and you have one of these ***Sky and Telescope*** star maps for each month of the year. However, you are not observing at 9:00 p.m., but at 1:00 a.m. in the morning. Which monthly star map should you use? _____