Lab 6
The Hertzsprung-Russell Diagram

Names: _____

Task #1: Finish filling out the V_{mm} and B_{mm} columns in Table 12.2. (**15 points**)

Task #2: Convert all of the B and V diameters into V magnitudes and $(B - V)$ color index, entering them into the proper column in your data table. (**15 points**)

$$V_{mag} = -2.95 \times V_{mm} + 15.9$$

$$(B - V) = -1.0 \times (B_{mm} - V_{mm}) + 0.1$$

Task #3: For each star in your table, plot its position where the $(B - V)$ color index is the X coordinate, and the V magnitude is the Y coordinate. Note that some stars will have very similar magnitudes and colors because they are the same types of star. When this happens, simply plot them as close together as possible, making sure they are slightly separated for clarity. (**15 points**)

12.5 Results

1. Are there more B stars in the Pleiades, or more K stars? (**5 points**)

2. Given that the Sun is a main sequence G star, draw an "X" to mark the spot where the Sun would be in your Color-Magnitude diagram for the Pleiades. (Hint: Use Table 12.1) (**5 points**)

3. The faintest stars that the human eye can see on a clear, dark night is V = 6.0. If the Sun was located in the Pleiades, could you see it with the naked eye? (**5 points**)

4. Are there any red giants or supergiants in the Pleiades? What does this tell you about the age of the Pleiades? (**5 points**)

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Table 12.2: Data Table

#	X	Y	V(mm)	B(mm)	V(mag)	$(B-V)$
01	157.00	832.00	3.10	2.89	6.76	0.31
02	157.61	832.20	2.49	2.00	8.50	0.59
03	178.33	821.70	2.37	1.70	8.91	0.77
04	183.40	830.51	2.32	1.60	9.06	0.82
05	190.53	818.94	2.24	1.52	9.29	0.82
06	190.62	834.99	2.23	1.52	9.32	0.81
07	192.98	865.44				
08	197.37	754.50				
09	202.78	696.35	2.23	1.46	9.32	0.87
10	203.87	810.57	2.36	1.72	8.94	0.74
11	210.57	789.29	2.32	1.62	9.06	0.80
12	212.22	693.49	2.48	1.97	8.58	0.61
13	233.44	830.40				
14	234.34	759.27	2.35	1.57	8.97	0.88
15	235.50	751.74	2.40	1.85	8.82	0.65
16	246.00	807.00	3.26	3.07	6.28	0.29
17	252.95	795.24	2.75	2.35	7.78	0.50
18	254.95	688.02				
19	259.60	730.54	2.39	1.74	8.85	0.75
20	260.00	795.00	2.35	1.77	8.97	0.68
21	265.00	792.00	2.24	1.48	9.29	0.86
22	265.00	831.00	2.95	2.65	7.20	0.40
23	266.66	831.82	2.20	1.36	9.41	0.94
24	269.27	731.47	2.18	1.33	9.47	0.95
25	270.00	789.00	2.31	1.62	9.09	0.79
26	274.00	790.00	2.32	1.70	9.06	0.72
27	276.28	836.35	2.50	1.98	8.53	0.62
28	277.19	811.96	2.22	1.55	9.35	0.77
29	283.00	792.00	2.35	1.75	8.97	0.70
30	285.00	774.00				
31	288.00	786.00	2.20	1.42	9.41	0.88
32	289.50	852.50	2.18	1.54	9.47	0.74
33	291.00	822.00	4.24	4.46	3.39	-0.12
34	297.00	822.00	3.46	3.38	5.69	0.18
35	298.00	793.00	4.40	4.70	2.92	-0.20
36	299.00	749.00	4.09	4.23	3.83	-0.04
37	304.00	773.00	2.39	1.79	8.85	0.70
38	308.00	777.00	2.31	1.67	9.09	0.74
39	310.00	794.04				
40	312.00	748.00	3.35	3.20	6.02	0.25

Table 12.3: Data Table (cont.)

#	X	Y	V(mm)	B(mm)	V(mag)	$(B-V)$
41	316.46	832.35	2.52	2.01	8.47	0.61
42	317.00	766.00	3.93	4.00	4.31	0.03
43	319.14	731.31	2.38	1.81	8.88	0.67
44	320.29	742.55	2.17	1.46	9.50	0.81
45	322.43	819.50	2.17	1.52	9.50	0.75
46	325.00	756.00	3.62	3.57	5.22	0.15
47	327.00	787.00	2.20	1.47	9.41	0.83
48	327.80	841.25	2.34	1.68	8.99	0.76
49	329.00	771.00	2.87	2.52	7.43	0.45
50	332.00	794.00	2.62	2.14	8.17	0.58
51	335.13	732.56	2.28	1.54	9.17	0.84
52	347.41	654.23	2.15	1.43	9.55	0.82
53	352.00	756.00				
54	359.05	685.95	2.35	1.70	8.97	0.75
55	361.00	807.00				
56	368.31	692.12	2.35	1.69	8.96	0.76
57	375.90	729.41	2.20	1.50	9.41	0.80
58	375.90	729.41	2.36	1.73	8.94	0.73
59	386.00	813.00	2.37	1.72	8.91	0.75
60	387.50	683.69	2.20	1.54	9.41	0.76
61	397.48	769.11				
62	410.49	839.98	2.34	1.62	8.99	0.82
63	420.52	720.04				