Quiz 08: Photoelectric Photometry of the Pleiades

Observations of two stars in the Pleiades are shown in the table on the right.

Star	B	V	B–V
14	6.830	6.814	**0.016**
20	5.380	5.433	**-0.053**

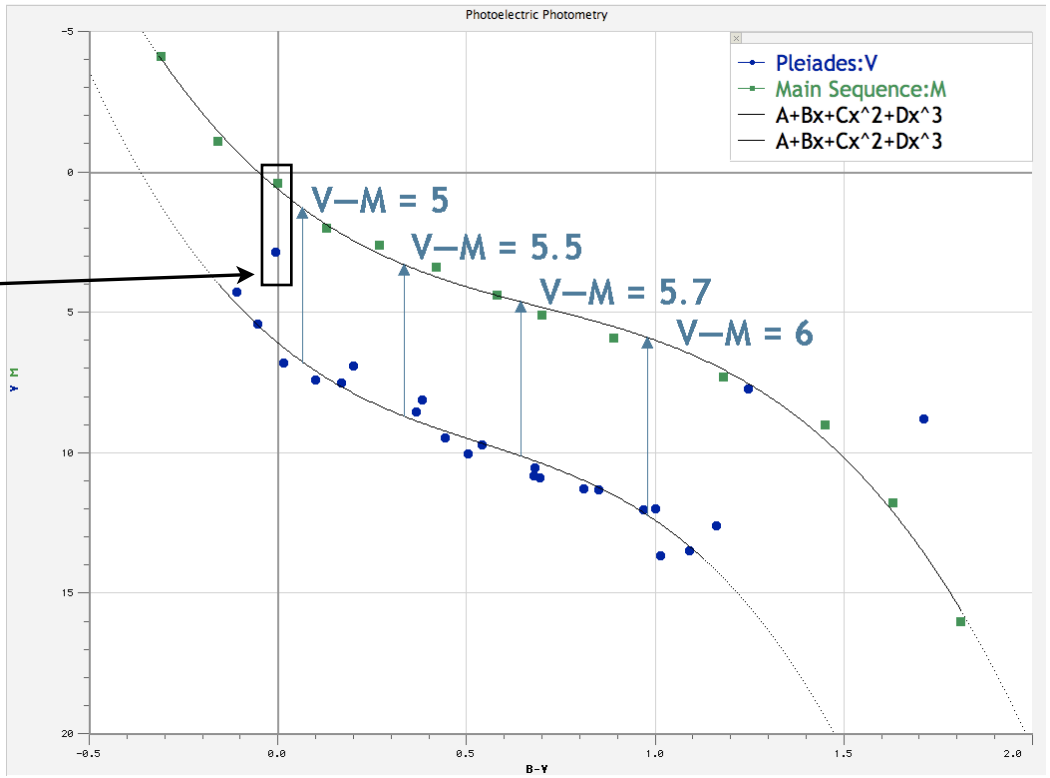
71. Which star is the brighter star as viewed from the Earth?
    A) Star 14.
    B) Star 20.
    C) Both stars are equally bright.

72. Calculate the B–V value for Star 14. Answer numerically with **three decimal places.** B–V = 0.016

73. Calculate the B–V value for Star 20. Answer numerically with **three decimal places.** B–V = -0.053

74. Which star is the hotter star? (Hint: Compare the B–V values!)
    A) Both stars are the same temperature.
    B) Star 14.
    C) Star 20.
    D) Cannot tell from this information!

The graph on the right was constructed using the same methods as you used in lab. The top curve (square points) is the calibrated main sequence. The bottom curve (round points) is the Pleiades data.



75. Two stars, one reference, on from the Pleiades, are boxed on the graph. Both stars have the same B–V value, B–V ≈ 0. These two stars
    A) are virtually identical in luminosity and temperature.
    B) have very different luminosities and temperatures.

76. **True** or false: The Pleiades curve is dimmer than the main sequence calibrated curve.

77. True or **false:** The Pleiades are closer than 10 pc to the Earth.

78. Use the V–M measurements on the graph to find the **average** V–M. Answer numerically. V–M = 5.55

79. When more values for V–M are calculated, the final average is determined to be **V–M = 5.6**. Use this average value to calculate the distance from the Earth to the Pleiades, using: $d = 10^{\left(\frac{(V-M)+5}{5}\right)}\,\text{pc}$. The distance is
    A) 90 pc
    B) 104 pc
    C) 116 pc
    D) 129 pc
    E) 132 pc

80. If the accepted distance is 135 pc, what is the percent error in the experimental value?
    A) 0%
    B) 0.022%
    C) 0.044%
    D) 2.2%
    E) 4.4%