1. Apparent Magnitude: $\Delta m = 2.5\log(F_2/F_1)$

$$\Delta m = 2.5\log(2.4)$$
$$\Delta m = 0.951$$

2. (a)

$$d = \frac{1}{p''}$$
$$d = \frac{1}{0.13}$$
$$d = 7.69\text{pc}$$

(b) Absolute Magnitude: $m - M = 5\log(\frac{d}{10})$

$$-0.30 - M = 5\log(\frac{7.69}{10})$$
$$M = -5\log(\frac{769}{10}) - 0.30$$
$$M = 0.270$$

3. Absolute Magnitude: $m - M = 5\log(\frac{d}{10})$

$$3.4 - 1.8 = 5\log(\frac{d}{10})$$
$$d = 20.89\text{pc}$$

4. (a) Absolute Magnitude: $m - M = 5\log(\frac{d}{10})$

$$10 - M = 5\log(\frac{100}{10})$$
$$M = 5$$

(b) Absolute Magnitude: $m - M = 5\log(\frac{d}{10})$

$$5 - M = 5\log(\frac{1}{10})$$
$$M = 10$$

(c) Absolute Magnitude: $m - M = 5\log(\frac{d}{10})$

$$6.5 - M = 5\log(\frac{350}{10})$$
$$M = -1.22$$

(d) Absolute Magnitude: $m - M = 5\log(\frac{d}{10})$

$$3.0 - M = 5\log(\frac{5}{10})$$
$$M = 4.51$$

(e) Absolute Magnitude: $m - M = 5\log(\frac{d}{10})$

$$-1.0 - M = 5\log(\frac{500}{10})$$
$$M = -9.49$$

(f) Absolute Magnitude: $m - M = 5\log(\frac{d}{10})$

$$6.5 - M = 5\log(\frac{\frac{1}{0.003}}{10})$$
$$M = -1.11$$

5. (a) Absolute Magnitude: $m - M = 5\log(\frac{d}{10})$

$$-26.75 - M = 5\log(\frac{\frac{1}{206265}}{10})$$
$$M = 4.822$$

(b) Absolute Magnitude: $m - M = 5\log(\frac{d}{10})$

$$m - 4.822 = 5\log(\frac{1.30}{10})$$
$$m = 0.39$$

(c) Absolute Magnitude: $m - M = 5\log(\frac{d}{10})$

$$19.3 - 4.822 = 5\log(\frac{d}{10})$$
$$d = 7863.21\text{pc}$$