1、 $\Delta m = 2.5\log_{10}\left(\frac{r_2}{r_1}\right)^2 = 8$ $r_1 \approx 238.86mm$

2、 $\frac{1100}{32} = 34.375$ $\frac{1100}{11} = 100$ $\frac{1100\times2}{32} = 68.75$ $\frac{1100\times2}{11} = 200$

$\theta_1 = \frac{D_1}{f_1} = \frac{27}{32} = 0.84375\,rad$ $\theta_2 = \frac{D_2}{f_2} = \frac{8}{11} \approx 0.7273\,rad$

3、 (1) $t = \frac{1500mm}{320mm} = 4.6875$

(2) $\frac{D}{F} = \frac{d}{K} \Rightarrow d = \frac{DK}{F} = \frac{320\times(165+42)}{1500} \approx 44.16\,mm$

(3) 100

(4) $\theta = \frac{44mm}{1500mm} \approx 0.0293\,rad$

(5) $\theta = \frac{1.22\lambda}{D} = 1.9825\times10^{-6}\,rad \approx 0.4''$

(6)

4 (1) $\frac{F}{D} = 10 \Rightarrow F = 2500mm$ $F' = 2.7F = 6750\,mm$

(2) $\frac{3.9}{6750} \times \frac{2.8}{6750} = 1.9864' \times 1.4261'$

(3) $d = 4.7AU$ $\theta = \frac{D}{d} \approx 2.039\times10^{-4}\,rad \approx 0.7'$

(4) $\frac{0.7}{1.4261} \times 2.8 \times 165 \approx 227$

(5) 放大成像

5. $\Delta\theta = \frac{1.22\lambda}{D} \approx 0.0545''$ $\frac{\lambda}{D} = \frac{\lambda'}{D'} \Rightarrow D' \approx 276923\,m$

6. $\Delta\theta = \frac{1.22\lambda}{D} = 1.0248\times 10^{-7}\,rad \approx 0.021''$

homework 2

1. 最大倍率：$\frac{900}{12.5} = 72$

   最大视场：$\frac{22}{900} \approx 0.024\,rad$

2. $\Delta m = 2.5\log_{10}\left(\frac{6.5}{2.4}\right)^2 \approx 2.164$

3. $\Delta\theta = \frac{1.22\lambda}{D} \approx 0.0385\,rad$