$$\Rightarrow d^2 = \frac{R_s^2}{4}\left(\frac{T_s}{T_p}\right)^4$$

$$\Rightarrow \boxed{d = \frac{R_s}{2}\left(\frac{T_s}{T_p}\right)^2}$$ (2 points)

(1 point)

$$R_{low} = \frac{1}{2}\, 7\cdot 10^8 m \left(\frac{5800}{320}\right)^2 = 3.5\cdot 10^{10} m \left(\frac{5.8}{3.2}\right)^2$$

$$= 3.5\cdot 10^{10} m \left(\frac{6}{3}\right)^2 \left(\frac{1-\frac{0.2}{6}}{1+\frac{0.2}{3}}\right)^2$$

$$= 3.5\cdot 10^{10} m \; 4 \left(1 - \frac{0.1}{3} - \frac{0.2}{3}\right)^2$$

$$= 1.4\; 10^{11} m \; (1 - 0.2)$$

$$\simeq 1.12\; 10^{11} m$$

$$= 1.15\; 10^{11} m$$ (correct result). (1 point)

(1 point)

$$R_{high} = \frac{1}{2}\, 7\, 10^8 m \left(\frac{5700}{270}\right)^2 \underset{\substack{\uparrow \\ \text{as above}}}{=} 1.4\; 10^{11} m \left(\frac{1-\frac{0.2}{6}}{1-\frac{0.3}{5}}\right)^2$$

$$\simeq 1.4\; 10^{11} m \left(1 + \frac{0.4}{3}\right)$$

$$\simeq 1.6\; 10^{11} m$$

$$= 1.615\; 10^{11} m$$

(1 point) for final numbers.