Wes stands in his hotel room in Cancun and admires his tan in a mirror that allows him to look "larger than life." A) What type of mirror is Wes using? B) Where should Wes stand in relation to the focal point of the mirror in order to appear enlarged?

a) concave

b) closer than focal pt

C) If the mirror has a focal length of 75.0 cm, and Wes stands 50.0 cm from the mirror's surface, where is his image located?

$f = +75\,cm$

$d_o = +50\,cm$

$d_i = ?$

$$\frac{1}{f} = \frac{1}{d_o} + \frac{1}{d_i}$$

$$\frac{1}{f} - \frac{1}{d_o} = \frac{1}{d_i}$$

$$\frac{1}{75\,cm} - \frac{1}{50\,cm} = \frac{1}{d_i}$$

$$\frac{2}{150\,cm} - \frac{3}{150\,cm} = -\frac{1}{150\,cm} = \frac{1}{d_i}$$

$$d_i = -150\,cm$$

While decorating his Christmas tree, Vinnie discovers that he can see his reflection in a Christmas tree ball. A) If Vinnie looks into the ornament from a distance of 20.0 cm and focuses on his reflection 4.0 cm behind the ball, what is the focal length of the Christmas ball? B) Is Vinnie's image upright or inverted? C) Is his image larger or smaller?

$d_o = 20\,cm$

$d_i = -4\,cm$

$f = ?$

$$\frac{1}{f} = \frac{1}{d_o} + \frac{1}{d_i}$$

$$\frac{1}{f} = \frac{1}{20\,cm} - \frac{1}{4\,cm}$$

$$\frac{1}{f} = \frac{1}{20\,cm} - \frac{5}{20\,cm} = -\frac{4}{20\,cm}$$

$$\frac{1}{f} = -\frac{1}{5\,cm}$$

$f = -5\,cm$