1) A concave spherical mirror has a radius of curvature of 8 cm. Light is incident from a source placed 3 cm in front of the mirror. Where is the image? Describe the size, orientation and kind (i.e. virtual or real) of image. [15 pts]

\[
\frac{1}{f} = \frac{2}{R} = \frac{1}{P} + \frac{1}{q} \\
\frac{2}{8} = \frac{1}{3} + \frac{1}{q} \\
q = -12 \text{ cm}
\]

\[
M = -\frac{q}{P} = -\frac{-12}{3} = 4
\]

- Image is \textit{real} at -12cm, behind the mirror
- The size is 4x the \textit{image} object size
- Upright
- Virtual