

### 3.1.2 Virtual images

The reflection from a plane mirror is a good example of a virtual image. See Figure 3.2. The rays reflected by the mirror *seem to come from a point behind the mirror*. When those rays enter the

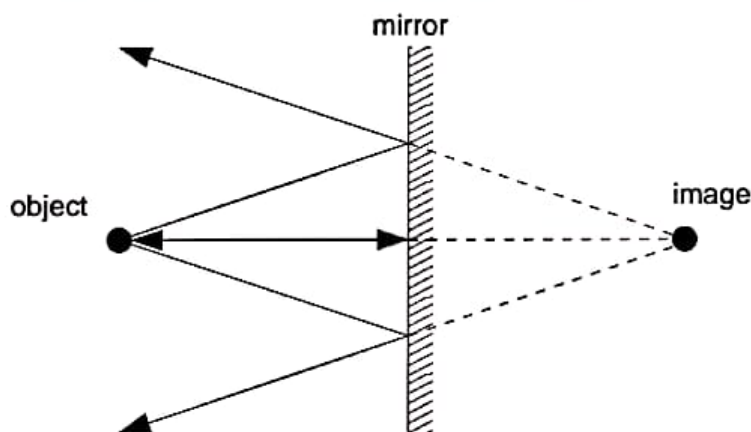


Figure 3.2: Virtual image formed by a plane mirror

eye of an observer or the objective of a camera, they will be seen as coming from a point. In that sense, we see the image of the object, but there is of course nothing actually there. If we placed a screen behind the mirror, nothing would be projected on it.

## 3.2 Curved mirrors

Curved mirrors are a key element of telescopes. They are usually **parabolic** in cross-section, for reasons to be discussed below. A **spherical** mirror is a good approximation if the curvature is low. A key property which is satisfied exactly by a parabolic mirror and approximately by a spherical one is the ability to focus a beam of light parallel to the **optical axis** – the axis of symmetry of the mirror – to a point, known as the mirror's **focal point** (see Figure 3.3).

## 3.3 Ray tracing with mirrors

To locate an image formed by a curved mirror, particular **auxiliary rays** from the object may be constructed. Consider the situation shown in Figure 3.4. Ray (1) from the object is parallel to the