

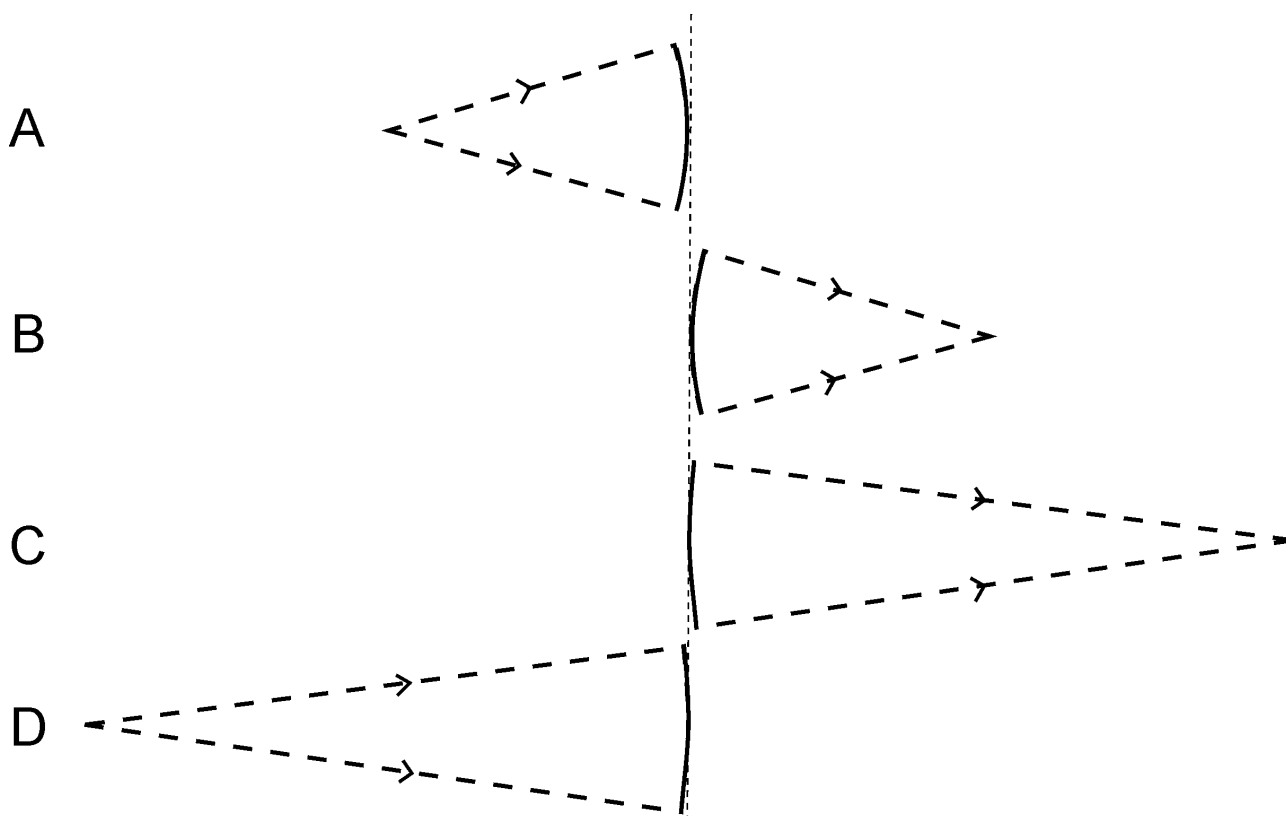
Curvature of wavefronts

Remember:

- Curvature = $1/(\text{radius of arc})$ and the curvature is in dioptres (D) when the radius is in metres (m)
- Converging means positive curvature
- Diverging means negative curvature.

In each case, the light comes from the left.

Treat the diagrams as being on a one-to-one 'life size' scale. The dotted line in the middle is the position at which we are interested in the wavefront curvature: it's where the lens is.



1. Calculate the curvature of (a) wavefront A, (b) wavefront B, (c) wavefront C, (d) wavefront D.
2. How much curvature do you need to add
 - (a) to turn wavefront A into wavefront B?
 - (b) to turn wavefront A into wavefront C?

(c) to turn wavefront D into wavefront B?

(d) to turn wavefront D into wavefront C?

3. Your box of lenses has five different converging lenses, marked with their focal lengths, which are +18 mm, +20 mm, +27 mm, +40 mm and +48 mm. Which of these will add the curvature you need for each part of question 2?