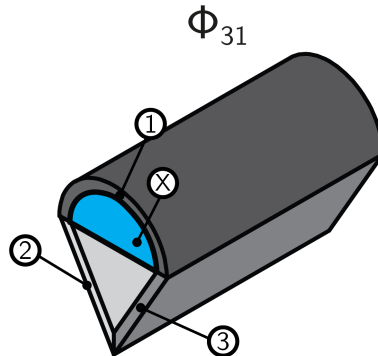


## View Factor 22

A long equilateral triangular body is connected to a semicircle. Determine the view factor  $\Phi_{31}$ :



One could think of a diagonal auxiliary plane  $X$ .

A flat plate can never see itself and therefore:

$$\Phi_{22} + \Phi_{33} + \Phi_{XX} = 0$$

From symmetry it can be seen that  $\Phi_{32} = \Phi_{3X}$ , combining this with the summation rule ( $\Phi_{32} + \Phi_{3X} + \Phi_{33} = 1$ ) yields:

$$\Phi_{3X} = \frac{1}{2}$$

From the summation rule of the top of the auxiliary plane  $X$  ( $\Phi_{XX} + \Phi_{X1} = 1$ ), it yields:

$$\Phi_{X1} = 1 - \Phi_{XX} = 1$$

Combining the information about the view factors  $\Phi_{3X}$  and  $\Phi_{1X}$  yields:

$$\Phi_{31} = \Phi_{3X} \Phi_{1X} = \frac{1}{2}$$