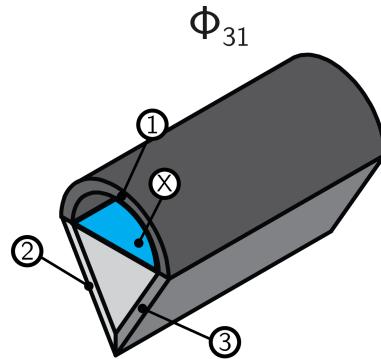


View Factor 22

A long equilateral triangular body is connected to a semicircle. Determine the view factor Φ_{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 Φ_{3X} and Φ_{X1} yields:

$$\Phi_{31} = \Phi_{3X}\Phi_{X1} = \frac{1}{2}$$