Problem 1.2-17

Figure P1.2-17 illustrates the temperature distribution in a plane wall at a particular instant of time.

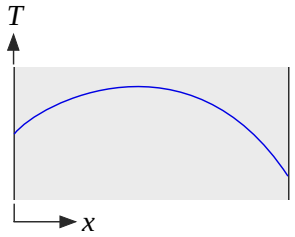

Figure P1.2-17: Temperature distribution in a plane wall at a certain instant in time.

Select the correct statement from those listed below and justify your answer briefly.

- The heat transfer at the left-hand face of the wall (i.e., at $x = 0$) is into the wall (in the positive x direction),
- The heat transfer at the left-hand face of the wall is out of the wall (in the negative x direction),
- It is not possible to tell the direction of the heat transfer at the left-hand face of the wall.

Fourier's law states that conduction is proportional to the negative of the temperature gradient. At the left-hand face of the wall the temperature gradient is positive; therefore, the heat transfer must be in the negative x-direction or out of the wall.