

Now, with the procedure practiced in Q1, locate the centroid of the same T-section but with respect to the reference axes systems shown in Fig. Q2, Q3 and Q4

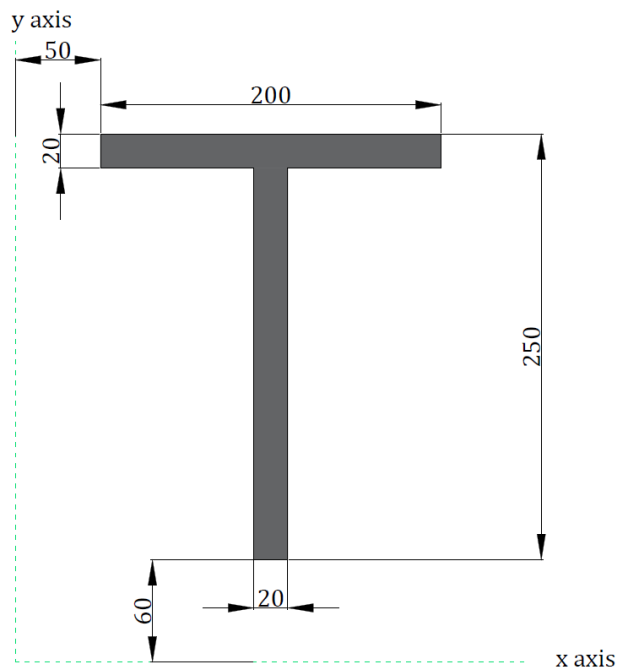


Fig. Q2: Reference axes displaced with respect to the one in Q1

(Hint: All x_i values increase by 50mm and all y_i values increase by 60mm)

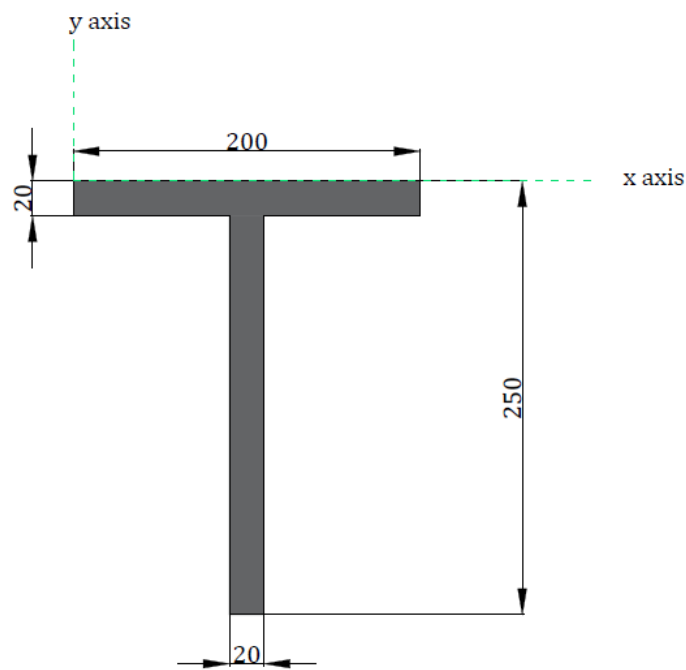


Fig. Q3: In this problem the coordinates (x_1, y_1) and (x_2, y_2) lie in the fourth quadrant

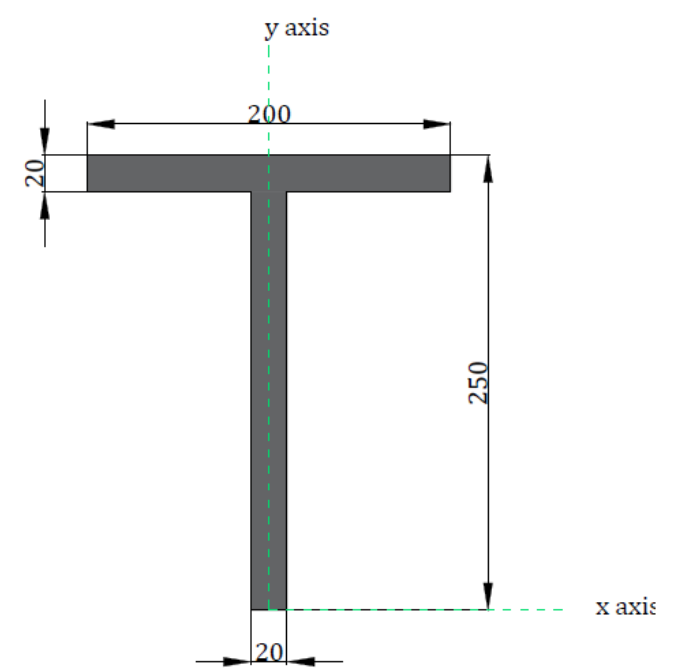


Fig. Q4: In this problem the y-axis divides the T-section into two equal (symmetric) parts. One part lies on the right side of y-axis (first quadrant) and the other on the left of it (second quadrant). Therefore, here the T-section must be divided into 4 basic shapes

After solving problems in Fig. Q1, Q2, Q3 and Q4, which reference coordinate system is most convenient in terms of lesser calculation? Give reasons

(Hint and discussion): If a vertical line is drawn through the centroid of the T-section, it divides it into two equal parts. Such a line is called the line or axis of symmetry. But a horizontal line drawn through the centroid does not divide it into two equal parts. This means that the T-section has only one axis of symmetry (vertical)

Sections may be symmetric about both vertical and horizontal axes as well. (even inclined axis in some cases). e.g. a rectangle or square is symmetric about both, vertical and horizontal axes, but an erect equilateral triangle is symmetric about vertical axis (passing through its vertex) only and not about the horizontal axis

It is known that for symmetric shapes the centroid lies on the axis/axes of symmetry)