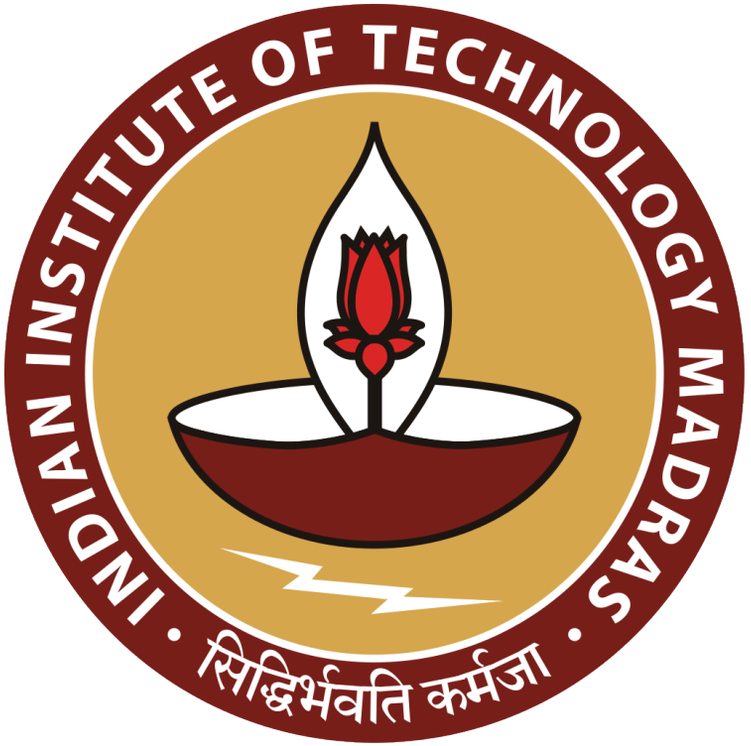


IIT Madras

ONLINE DEGREE

Area of a Triangle using coordinates

Goal: To find area of ▵ABC with known coordinates.

Let the coordinates of the vertices be A (x_1, y_1), B(x_2,y_2) and C(x_3, y_3).

A(△ABC) = A(ADFC) - A(ADEB) - A(BEFC)

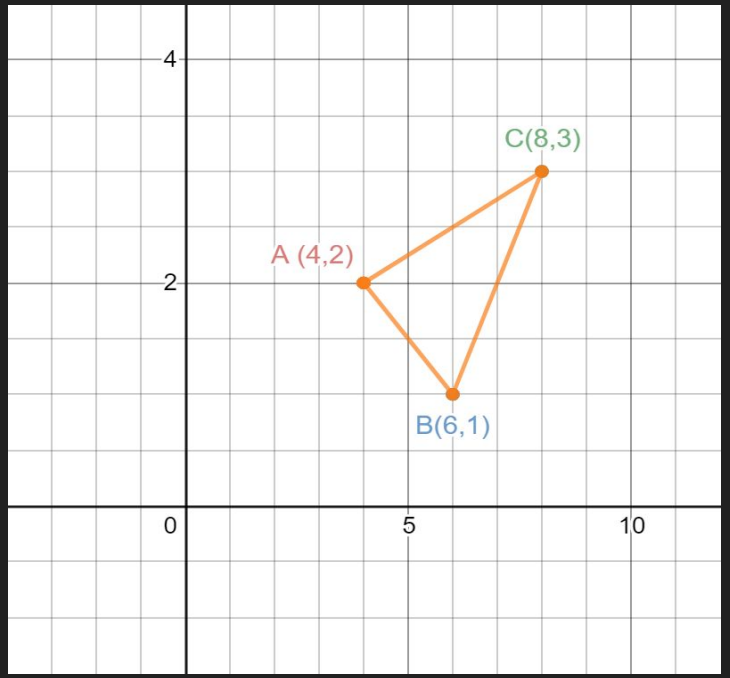
A(ADFC) = ½ (AD+CF)xDF = ½ $(y_1 + y_3)(x_3 - x_1)$

A(ADEB) = ½ (AD+EB)xDE = ½ $(y_1 + y_2)(x_2 - x_1)$

A(BEFC) = ½ (BE+CF)xEF = ½$(y_2 + y_3)(x_3 - x_2)$

A(△ABC) = ½(2+3)x4 - ½(2+1)x2 - ½(1+3)x2

= 10 - 3 - 4 = 3 square units.



A(△ABC) = ½ $|x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)|$.