ASSIGNMENT$_1$

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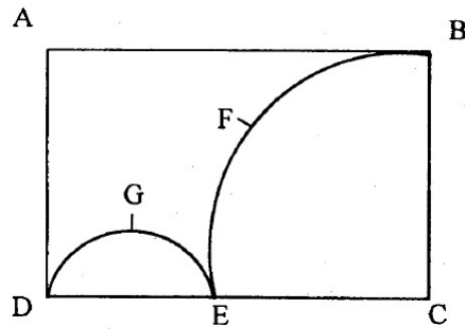
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Question 3 (c)

Figure 1: rectangle

In the figure given below, **ABCD** is a rectangle.**AB** $= 14$ cm**BC** $= 7$ cm.
From the rectangle, a quarter circle **BFEC** and a semicircle **DGE** are removed.
Calculate the area of the remaining piece of the rectangle?.
(Take $\pi = 22/7$)

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solution:

$$Area\ of\ rectangle = length * width$$
$$Area\ of\ circle = \pi * radius^2$$

$$so\ area\ of\ rectangle\ ABCD = 14cm * 7cm$$
$$= 98cm^2.$$

$$Area\ of\ quater\ circle = \frac{1}{4} * \pi * (radius)^2$$
$$Area\ of\ \textbf{BFEC}\ region = \frac{1}{4} * \pi * (7cm)^2$$
$$= \frac{77}{2}cm^2\ (radius\ is\ BC)$$

$$Area\ of\ semicircle = \frac{1}{2} * \pi * (radius)^2$$
$$Area\ of\ \textbf{GD}E\ region = \frac{1}{2} * \pi * (\frac{7}{2}cm)^2$$
$$= \frac{77}{4}cm^2$$

$$The\ length\ of\ BC = EC = 7cm$$
$$length\ of\ AB = DC = 14cm$$
$$So\ DE = DC - EC = 7cm$$
$$\therefore the\ radius\ of\ semicircle\ GDE = \frac{DE}{2} = \frac{7}{2}cm$$

Area of remaining piece of rectangle **ADGEFB**A =area of rectangle -area of semicircle **-** area of quarter circle.

$$\implies arearequired = 98cm^2 - \frac{77}{2}cm^2 - \frac{77}{4}cm^2$$
$$= \frac{161}{4}cm^2$$
$$= 40.25cm^2$$

$$\therefore Area\ of\ the\ region\ ADGEFB = 40.25cm^2$$
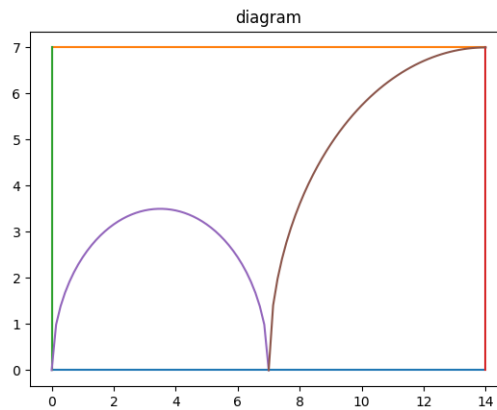
Figure 2: python programmed

Verification in python

Figure 3: python

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