

Except for the following questions, all the remaining questions have been asked in [Set I](#).

Q. 1. Express the following as a rational expression:

$$\left(1 + \frac{x}{1-x}\right) \left(\frac{x}{1+x} - 1\right) \div \frac{1+x^2}{1-x^2}$$

Q. 2. If $(x - 2)$ is a factor of $x^3 + ax^2 + bx + 16$ and $a - b = 6$, find the value of a and b .

Q. 3. If the 8th term of an A.P. is 31 and the 15th term is 16 more than the 11th term, find the A.P.

Q. 4. Find the sum of the following:

$$25 + 28 + 31 + \dots + 100$$

Q. 11. Solve the following equations graphically:

$$3x + 2y - 4 = 0 \text{ and } 2x - 3y - 7 = 0$$

Shade the region bounded by the lines and x-axis.

Q. 15. If the mean of the following distribution is 54, find the value of p :

Classes	0 - 20	20 - 40	40 - 60	60 - 80	80 - 100
Frequency	7	p	10	9	13

Q. 16. Draw a pie chart for the following data of a Five Year Plan outlay of a State on different sectors of the economy:

Sector	Expenditure (In crore Rs.)
Agriculture	500
Irrigation	600
Energy	700
Industry	400
Communication	200

Q. 23. Prove that the ratio of the areas of similar triangles is equal to the ratio of the squares on their corresponding sides.

Use the above in the following:

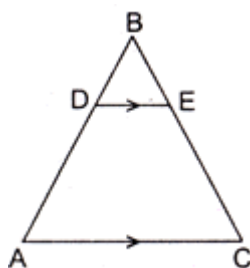


Fig. 3

In Figure 3, D divides AB such that $AD : DB = 3 : 2$ and E is a point on BC such that $DE \parallel AC$. Find the ratio of areas of $\triangle BAC$ and $\triangle BDE$.