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 8^{th} term of an A.P. is 31 and the 15^{th} term is 16 more than the 11^{th} term, find the A.P.

Q. 4. Find the sum of the following:

25 + 28 + 31+ ...+ 100

Q. 11. Solve the following equations graphically:
3x + 2y — 4 = O 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:

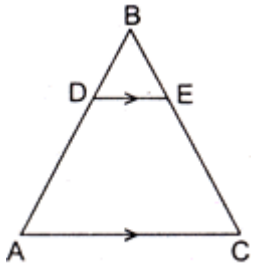

Fig. 3

In Figure 3, D divides AB such that AD : DB = 3 : 2 and E is a point on BC such that DE || AC. Find the ratio of areas of ΔBAC and ΔBDE.