

## APPLICATION OF INTEGRALS

### QUESTION 1:

Find the area of the region bounded by  $y = 4x^2$ ,  $x=0$ ,  $y=1$ ,  $y = 4$

### QUESTION 2:

The curves  $y = x^2$  and  $x = y^2$  divide the square bounded by  $x = 0$ ,  $y=0$ ,  $x=1$  and  $y=1$  into three parts. Find the area of each part.

**QUESTION 3:** Find  $\int_{-8}^0 |x+4| dx$  using the method of Area under curves .

### QUESTION 4:

Find the area bounded by the curve  $y = 2x - x^2$  and the line  $y = -x$ .

### QUESTION 5:

Find the area of the region bounded by  $y = \frac{5}{2}x - 5$ ;  $x + y - 9 = 0$ ;  $y = \frac{3}{4}x - \frac{3}{2}$

### QUESTION 6:

Find the area of the smaller region bounded by the curves  $x^2 + y^2 = 4$  and  $y^2 = 3(2x - 1)$ .

### QUESTION 7:

. Find the area of the region  $\{(x,y) : y^2 \geq 6x, 4x^2 + 4y^2 \leq 32\}$

### QUESTION 8:

### QUESTION 9:

Calculate the area of the Triangle AOB is in the first quadrant of the ellipse  $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ , where

OA = a and OB = b. Find the area enclosed between the chord AB and the arc AB of the ellipse .

### QUESTION 10:

Find the smaller of the two areas in which the circle  $x^2 + y^2 = 2a^2$  is divided by the parabola  $y^2 = ax$ ,  $a > 0$

**QUESTION 11:** Find the area of the region bounded by  $y^2 = 4x$ ,  $x = 1$  and  $x = 4$  and X-axis in the first quadrant.

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## Application of Integrals Assignment/Worksheet

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### QUESTION 12:

Using integration, find the area of the region enclosed between the circle:  $x^2 + y^2 = 1$  and  $(x-1)^2 + y^2 = 1$ .

### QUESTION 13:

Find the area enclosed by the ellipse  $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$  using  $\int_0^b x dy$

### QUESTION 14:

Find the area of the region bounded by the parabola  $y^2 = 4ax$  and  $x = a$

**QUESTION 15:** Find the area of the shaded region, if the slope of the line BD is 3.

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