



MATHS

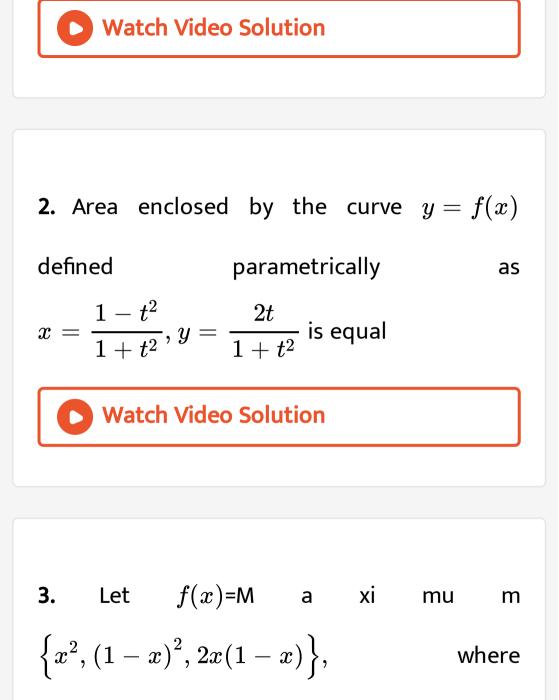
BOOKS - CENGAGE

APPLICATION OF INTEGRALS

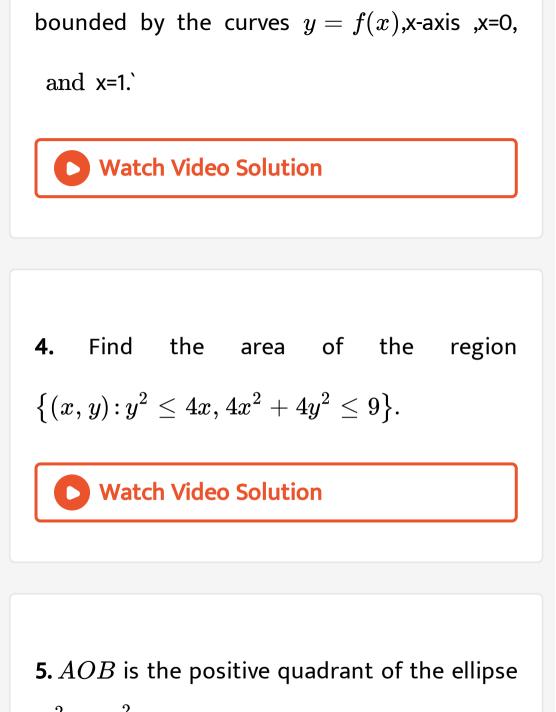
Solved Examples And Exercises

1. If the area by $y = x^2 + 2x - 3$ and the line

y = kx + 1 is the least, find k and also the least area.



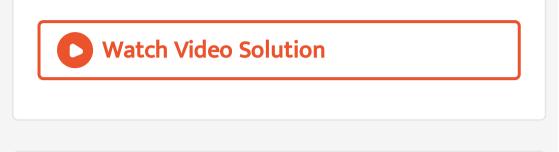
 $0 \leq x \leq 1$. Determine the area of the region



 $rac{x^2}{a^2}+rac{y^2}{b^2}=1$ in which OA=a,OB=b .

Then find the area between the arc AB and

the chord AB of the ellipse.



6. Find the area lying above x-axis and included

between the circle $x^2+y^2=8x$ and inside the parabola $y^2=4x.$

7. Find the area of the smaller part of the circle

$$x^2+y^2=a^2$$
 cut off by the line $x=rac{a}{\sqrt{2}}.$

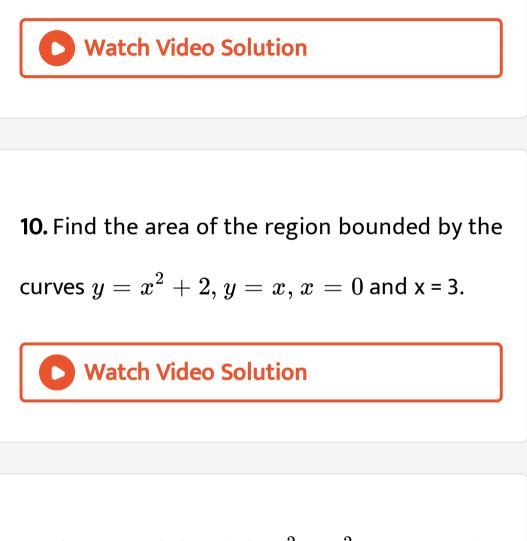
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8. Prove that the area bounded by the circle $x^2 + y^2 = a^2$ and the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ is equal to the area of another ellipse having semi-axis a - b and a, a > b.

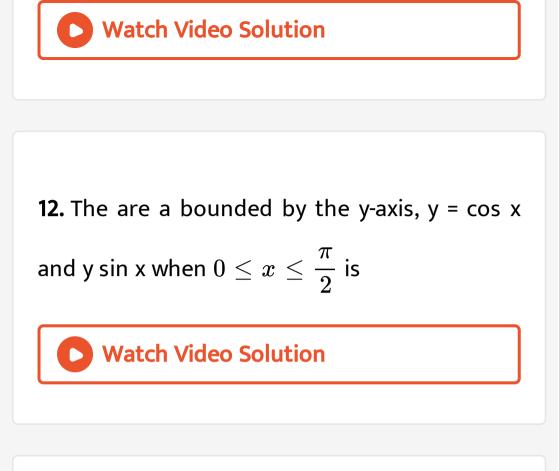
9. Each question has four choices, a,b,c and d, out of which only one is correct. Each question contains STATEMENT 1 and STATEMENT 2. If both the statement are TRUE and STATEMENT 2 is the correct explanation of STATEMENT 1. If both the statements are TRUE but STATEMENT 2 is NOT the correct explanation of STATEMENT 1. If STATEMENT 1 is TRUE and STATEMENT 2 is FLASE. If STATEMENT 1 is FALSE and STATEMENT 2 is TURE. Statement 1: Lagrange mean value theorem is applicable not to

f(x) = |x-1|(x-1) Statement 2: |x-1|

is not differentiable at x = 1.



11. The area of the circle $x^2 + y^2 = 16$ exterior to the parabola $y^2 = 6x$ is

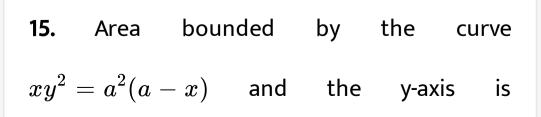


13. Prove that sec x-cos x=tan x sin x



14. The area of the region whose boundaries
are defined by the curves
$$y = 2\cos x, y = 3\tan x, and the y - a\xi sis$$

 $1 + 31n\left(\frac{2}{\sqrt{3}}\right)squares$
 $1 + \frac{3}{2}1n3 - 31n2squares$
 $1 + \frac{3}{2}1n3 - 1n2squares$
 $1 + \frac{3}{2}1n3 - 1n2squares$
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$$rac{\pi a^2}{2}squal inits$$
 (b) $\pi a^2squal inits$ (c) $3\pi a^2squal inits$

(d) None of these

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16. The area of the closed figure bounded by

$$y=rac{x^2}{2}-2x+2$$
 and the tangents to it at $\left(1,rac{1}{2}
ight)$ and $(4,2)$ is (A) $rac{9}{8}$ sq.unit (B) $rac{3}{8}$ sq.units (C) $rac{3}{2}$ sq.units (D) $rac{9}{4}$ sq.units

17. Find the area bounded by the curve

$$x^2 = 4y$$
 and the line $x = 4y - 2$.