

# Calculus Worksheet

7.2-7.3

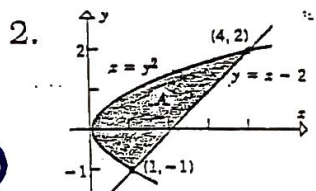
Name: ANSWERS  
 Period: \_\_\_\_\_ Date: \_\_\_\_\_

In the following, set up but do not evaluate the integral (for # 1-3)

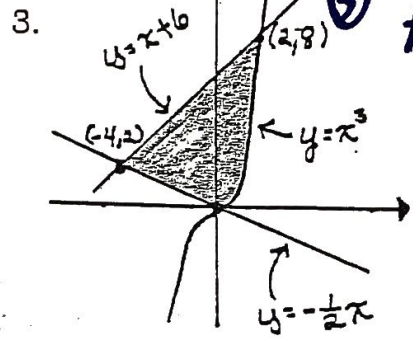
FIND THE AREA OF THE REGION IN 1-3

1. The region is bounded by  $y = x + 8$  and  $y = x^2 + 2$ .

①  $A = \int_{-2}^3 [(x+8) - (x^2+2)] dx$



②  $A = \int_{-1}^2 [(y+2) - y^2] dy$

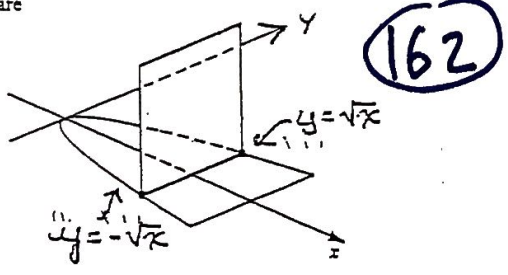


③  $A = \int_{-4}^0 [(x+6) - (-\frac{1}{2}x)] dx + \int_0^2 [(x+6) - x^3] dx$

FIND THE VOLUME OF EACH SOLID (REGULAR CROSS SECTIONS) IN 4 & 5.

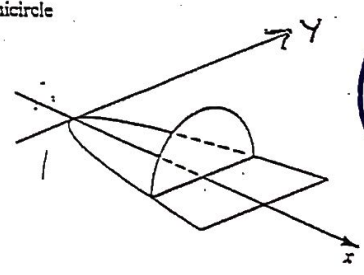
4. Let R be the region bounded by the graphs of  $x = y^2$  and  $x = 9$ . Find the volume of the solid that has R as its base if every cross section by a plane perpendicular to the x-axis has the given shape.

A. A square



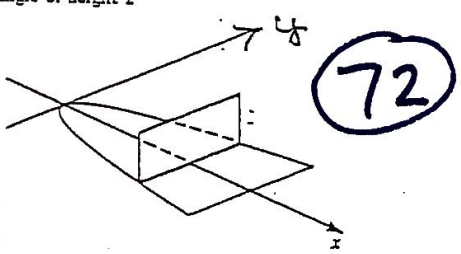
162

B. A semicircle



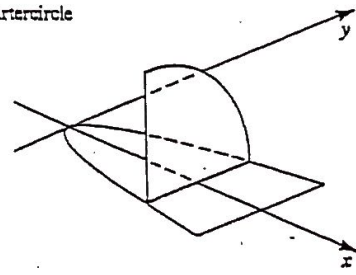
$\frac{81\pi}{4}$

C. A rectangle of height 2



72

D. A quartercircle



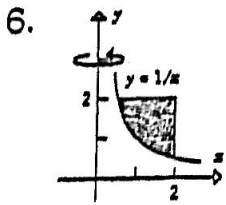
$\frac{81\pi}{2}$

5. A solid has, as its base, the circular region in a plane bounded by the circle  $x^2 + y^2 = 16$ . Find the volume of the solid if every cross section perpendicular to the y axis is an equilateral triangle.

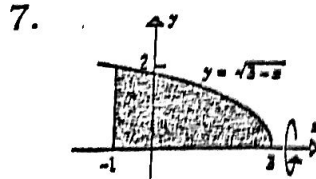


$\frac{256\sqrt{3}}{3}$

FIND THE VOLUME OF EACH SOLID IN 6-8 BY THE "DISK" OR "WASHER" METHOD.



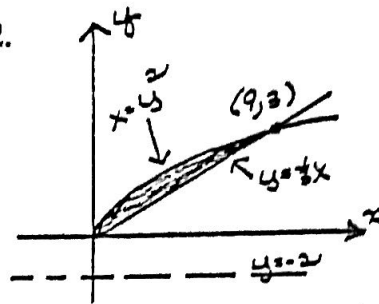
$$\frac{9\pi}{2}$$



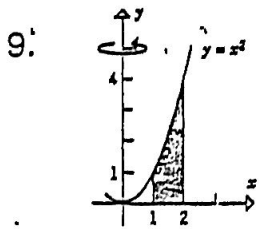
$$8\pi$$

8. Revolve the region shown about the line  $y = -2$ .

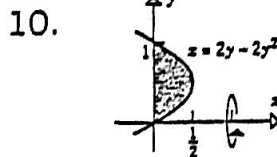
$$31.5\pi$$



FIND THE VOLUME OF EACH SOLID IN 9-11 BY THE "CYLINDRICAL SHELLS" METHOD.



$$\frac{15\pi}{2}$$



$$\frac{\pi}{3}$$

11. Revolve the region shown about the line  $x = 5$ .

$$V = 2\pi \int_0^4 \left[ (5-x) \left( \sqrt{x} + \frac{1}{4}x \right) \right] dx$$

(Set-up only)

