Calc AB Ch 7 Test Practice

Name: Block: Seat:

Chapter 7 Check List:

1 ..... Area of a Region Between Two Curves (p 445)

$$\int_a^b [f(x) - g(x)]\ dx$$

2 ..... The Disk Method (p 455)

Horizontal Axis of Revolution:

$$V = \pi \int_a^b [R(x)]^2\ dx$$

Vertical Axis of Revolution:

$$V = \pi \int_c^d [R(y)]^2\ dy$$

3 ..... The Washer Method (p. 457)

Horizontal Axis of Revolution:

$$\pi \int_a^b [R(x)]^2 - [r(x)^2]\ dx$$

Vertical Axis of Revolution:

$$\pi \int_c^d [R(y)]^2 - [r(y)^2]\ dy$$

4 ..... Volumes of Solids with Known Cross Sections (p. 459)

Horizontal Axis of Revolution:

$$\text{Volume} = \int_a^b A(x)\ dx$$

Vertical Axis of Revolution:

$$\text{Volume} = \int_c^d A(y)\ dy$$

where A is the area formula of the cross section.

Delta Math Check List:

1 ..... Practice Area Between Curves (7.1):

(a) Finding Area Non-Calculator (Level 1)

(b) Finding Area with Calculator (Level 1)

(c) Finding Area with Calculator (Level 2)

(d) Finding Area with Calculator (Level 3)

2 ..... Practice Volumes (7.2):

(a) Match 2D Figure/Solid of Revolution

(b) Solid of Revolution about Horizontal Line (Disk)

(c) Solid of Revolution about Horizontal Line (Washer)

(d) Solid of Revolution about Vertical Line

(e) Volume with Known Cross Section (x-axis)

Khan Academy Check List:

Differential Equations Unit: 10 lessons, 3 Quizzes

1 ..... Finding the Area between Curves (functions of x)

2 ..... Finding the Area between Curves (functions of y)

3 ..... Finding the Area between Curves (more than one intersection

4 ..... Volume with Disc Method around x or y axis

5 ..... Volume with Disc Method around other axes

6 ..... Volume with Washer Method around x or y axis

7 ..... Volume with Washer Method around other axes

8 ..... Volumes with Cross sections: squares and rectangles

9 ..... Volumes with Cross sections: triangles and semicircles

10 ..... Calculator Active Practice

Always review your Notes and Examples (see topics if you lost your notes), Quizzes, and old homework problems. There is a separate pdf with Multiple choice practice as well.

1. Let $f(x) = 4x - x^2$ and $g(x) = 3$.
   (a) Find the coordinates of A and B, the points of intersection of f and g.
   (b) Calculate the area enclosed between the curve and the line.

2. Let $f(x) = x^2$ and $g(x) = 2x^2 - 25$.
   (a) Find the coordinates of P and Q, the points of intersection of f and g.
   (b) Calculate the area enclosed between the curves.

3. Let $f(x) = 7x - 2x^2$ and $g(x) = 3x$.
   (a) Find the coordinates of A and B, the points of intersection of f and g.
   (b) Calculate the area enclosed between the curve and the line.

4. Let $f(x) = 2x^2 - 6$ and $g(x) = 10 - 2x^2$.
   (a) Find the coordinates of K and L, the points of intersection of f and g.
   (b) Calculate the area enclosed between the curves.

5. Let $f(x) = x^3 + x^2$ and $g(x) = 2x^2 + 2x$.
   (a) Find the coordinates of A and B, the points of intersection of f and g in the first quadrant.
   (b) Calculate the area enclosed between the curves in the first quadrant.

6. Let $f(x) = x(x-3)(x+3)$ and $g(x) = 7x$.
   (a) Find the coordinates of A, B, and C, the points of intersection of f and g.
   (b) Calculate the area enclosed between the curve and the line.

7. Let $f(x) = x^2 - 4x + 8$ and $g(x) = 8 + 4x - x^2$.
   (a) Find the coordinates of A and B, the points of intersection of f and g.
   (b) Calculate the area enclosed between the curves.

8. Let $f(x) = x^3 - 1$ and $g(x) = x^2 - 1$.
   (a) Calculate the area enclosed between the curves and the lines $x = -1$ and $x = 1$.

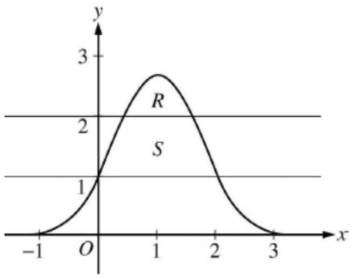
9. Let $f(x) = x^3 - x^2 - 7x + 5$ and $g(x) = 2x - 4$.
   (a) Find the coordinates of A, B, and C, the points of intersection of f and g.
   (b) Calculate the area enclosed between the curves.

10. Let $f(x) = x(x+3)$, $g(x) = \dfrac{4}{x^2}$ and $h(x) = x - \dfrac{x^2}{4}$.
    (a) Find the coordinates of A, B, C, and D, the points of intersection of f, g and h in the first quadrant.
    (b) Calculate the area enclosed between the curves.

11. Let R be the region in the first quadrant enclosed by the graphs of $f(x) = 8x^3$ and $g(x) = \sin(\pi x)$ Find the area of R

12. Find the area of the region bounded by $y = \sqrt{x}$ and $y = \dfrac{x}{2}$

13. Let $f(x) = e^{2x-x^2}$. Let region R be the area bounded by f and above the horizontal line $y = 2$, and let S be region bounded by the graph of f and between the horizontal lines $y = 1$ and $y = 2$ Find the area of R and S.



14. Let R be the region in the first quadrant under the graph of $y = \dfrac{1}{\sqrt{x}}$ for $4 \leq x \leq 9$.

    (a) Find the area of R

    (b) If the line $x = k$ divided the region R into two regions of equal area, what it the value of k?

15. Let R be the region enclosed by the graph of $y = \sqrt{x-1}$, the vertical line $x = 10$ and the x-axis.
    (a) Find the area of R

    (b) Find the volume of the solid generated when R is revolved about the horizontal line $y = 3$.

    (c) Find the volume of the solid generated when R is revolved about the vertical line $x = 10$.

16. (No Calc) Let R be the region bounded by the x-axis, the graph of $y = \sqrt{x}$ and the vertical line $x = 4$
    (a) Find the area of R.

    (b) Find the value of h such that the vertical line $x = h$ divided the region R into two regions of equal area.

    (c) Find the volume of the solid generated when R is revolved around the x-axis.

    (d) The vertical line $x = k$ divides the region R into two regions such that when these two regions are revolved about the x-axis, they generated solids with equal volumes. Find the value k.

17. Let the region S be the shaded region in the first quadrant bounded above by the horizontal line $y = 3$, below by the graph of $y = 3\sin x$, and on the left by the vertical line $x = \dfrac{\pi}{4}$.

    (a) What is the volume of the solid generated if S is revolved about the horizontal line $y = 3$?

    (b) What is the volume of the solid generated if S is revolved about the horizontal line $y = 5$?

    (c) What is the volume of the solid generated if S is revolved about the vertical line $x = \dfrac{\pi}{4}$?

    (d) What is the volume of the solid generated if S is revolved about the y-axis?

18. The base of a solid is bounded by $y = \sqrt{x}$ and $y = x^3$. Find the volume of the solid with each of the following cross sections:
    (a) Semi-circles perpendicular to the y-axis.

    (b) Rectangles perpendicular the the x-axis whose height is $\frac{1}{3}$ their base.

    (c) Isosceles Right triangle perpendicular to the x-axis with a leg in the base.

19. Let $f(x) = 2x^2 - 6x + 4$ and $g(x) = 4\cos\left(\frac{\pi x}{4}\right)$. Let R be the region bounded by the graphs of f and g. The region R is the base of a solid. For this solid, each cross section perpendicular to the x-axis is a square. What is the volume of this solid.