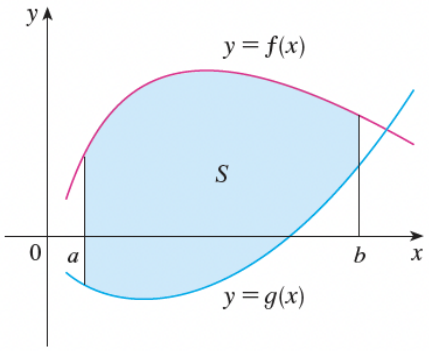
Created by Rukiyah Walker
Spring 2023

Question 1 (1 pts)

Suppose you want to find the area between the two curves in this graph. You need both Δx and the height between each curve. What is the formula to find the height between each curve?



A. $f(x) = g(x)$

B. $f'(x) - g'(x)$

C. $f(x) - g(x)$

D. $f(x) + g(x)$

Question 2 (1 pts)

Write the area between the two curves bounded by the lines $x = a$ and $x = b$ in question 1 as an integral.

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

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

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

D. $\int_a^b [f(x) + g(x)\Delta x]dx$

Question 3 (1 pts)

Suppose you want to find the area of the region enclosed by the two parabolas $y = x^2$ and $y = 2x - x^2$. Find the points of intersection of the two parabolas (the zeros). This will be the lower, a, and upper bounds, b, of the integrand.

A. $a = 1, b = 2$

B. $a = 0, b = 1$

C. $a = 2, b = 4$

D. $a = 0, b = 2$

Question 4 (1 pts)

Write the total area between the two curves in question 3 in integral form.

A. $\int_0^2 2x^2 - 2x dx$

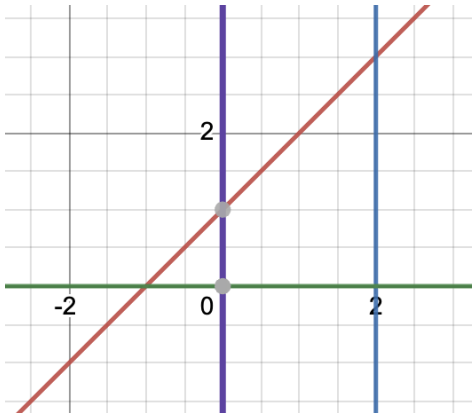
B. $\int_2^4 2x dx$

C. $\int_1^2 x^2 dx$

D. $\int_0^1 2x - 2x^2 dx$

Question 5 (1 pts)

Suppose you want to find the volume of the solid obtained by rotating the region bounded by $y = x + 1$, $y = 0$, $x = 2$, and $x = 0$ about the x-axis. By rotating around the x-axis, you get a new solid shape which can be split into multiple disks. What is the radius of the disk?



A. $r = 2$

B. $r = x - 1$

C. $r = x + 1$

D. $r = 0$

Question 6 (1 pts)

Write the volume of the solid in question 5 in integral form.

A. $\int_{-1}^{2} \pi(2x)^2 dx$

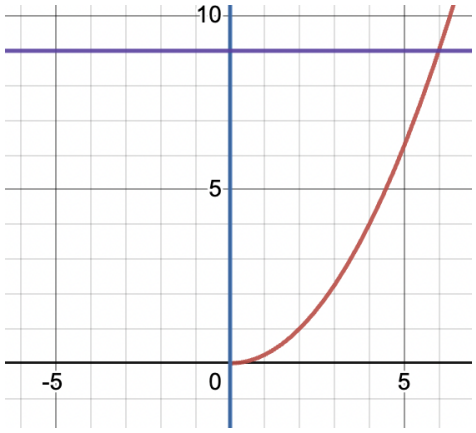
B. $\int_{0}^{2} \pi(x+1)^2 dx$

C. $\int_{0}^{2} \pi(x-1)^2 dx$

D. $\int_{-1}^{2} \pi(x-1)^2 dx$

Question 7 (1 pts)

Suppose you want to find the volume of the solid obtained by rotating the region bounded by $x = 2\sqrt{y}$, $x = 0$, and $y = 9$ about the y-axis. What is the radius of the disk of the resulting solid?



A. $r = y^2$

B. $r = 2x^2$

C. $r = 2y$

D. $r = 2\sqrt{y}$

Question 8 (1 pts)

Write the volume of the solid in question 7 in integral form.

A. $\int_{0}^{9} \pi(2\sqrt{y})^2 dy$

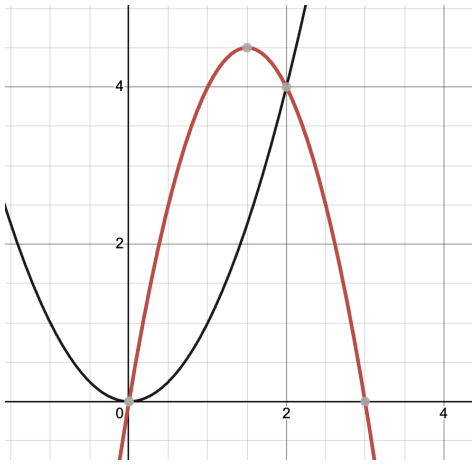
B. $\int_{0}^{6} \pi(\frac{x}{2})^2 dx$

C. $\int_{0}^{9} \pi(\frac{x}{2})^2 dy$

D. $\int_{0}^{6} \pi(2\sqrt{y})^2 dx$

Question 9 (1 pts)

Suppose you use the method of cylindrical shells to find the volume generated by rotating the region bounded by $y = x^2$ and $y = 6x - 2x^2$ about the y-axis. What is the height of a shell?



A. $6x - 2x^2$

B. $6x - 3x^2$

C. $\sqrt{y}$

D. x^2

Question 10 (1 pts)

Write the volume of question 9 in integral form.

A. $\int_0^2 2\pi x(6x - 2x^2)dx$

B. $\int_0^5 2\pi x\sqrt{y}dy$

C. $\int_0^5 2\pi x^3 dy$

D. $\int_0^2 2\pi x(6x - 3x^2)dx$