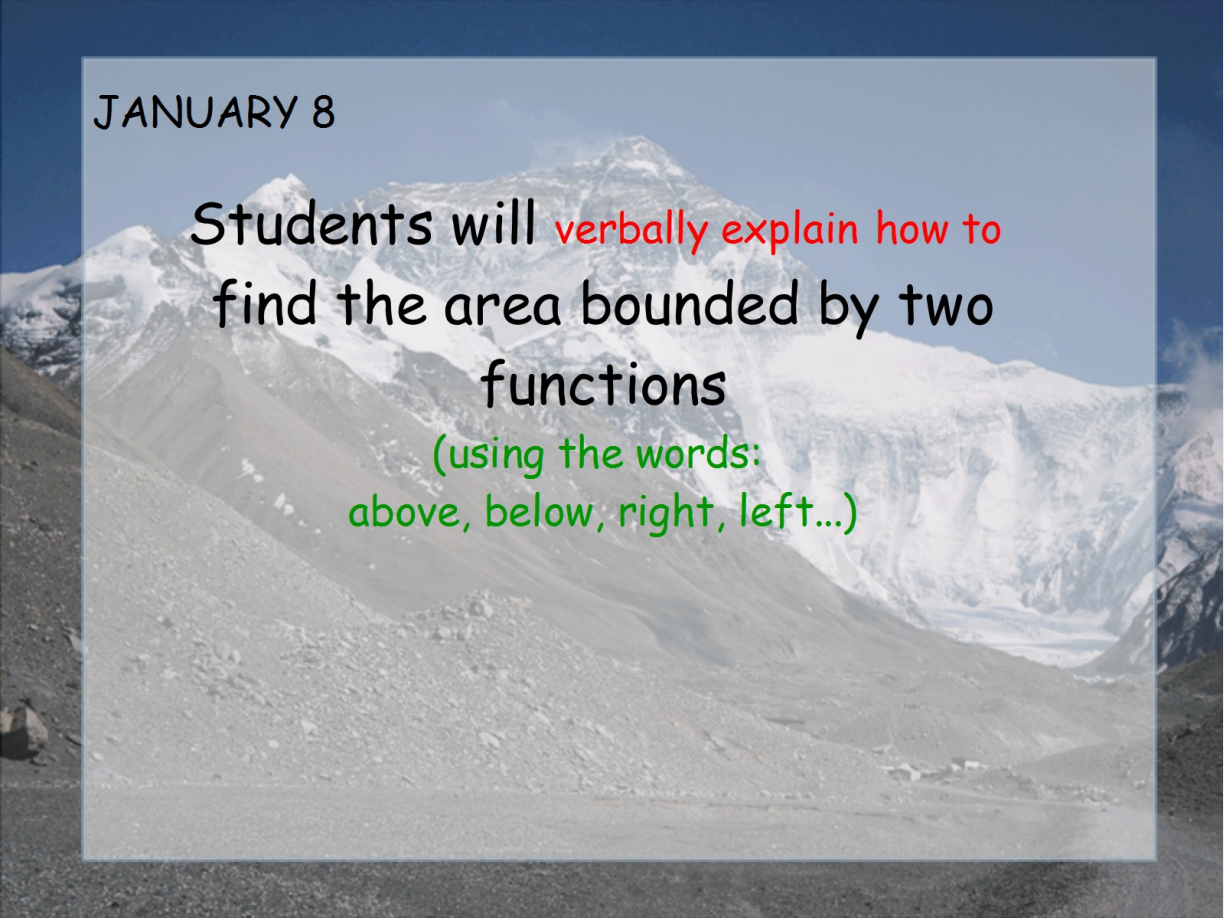


JANUARY 8

Describe the process for finding the area of a region bounded by two functions.



JANUARY 8

Students will verbally explain how to find the area bounded by two functions

(using the words:
above, below, right, left...)

Area bounded by 2 curves

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

or

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

Where $f(x) \geq g(x)$

Find the area enclosed by

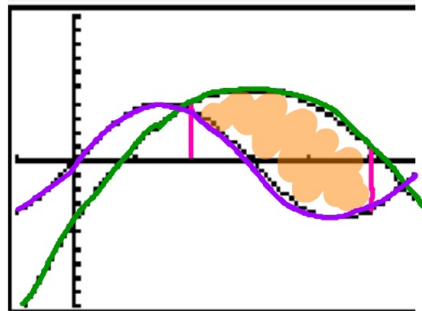
$$y = 4\sin\left(\frac{\pi x}{3}\right)$$

and

$$y = -(x-3)^2 + 5$$

on the interval

$[2, 5]$



$$f(x) = 4\sin\left(\frac{\pi x}{3}\right)$$

$$g(x) = -(x-3)^2 + 5$$

$$\int_2^5 g(x) dx - \int_2^5 f(x) dx$$

$$= 15.819$$

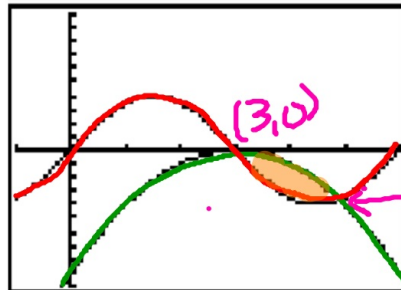
$$\int_2^5 g(x) - f(x) dx$$

Find the area enclosed by

$$y = 4\sin\left(\frac{\pi x}{3}\right)$$

and

$$y = -(x - 3)^2$$



$$x = 4.90799 = A$$

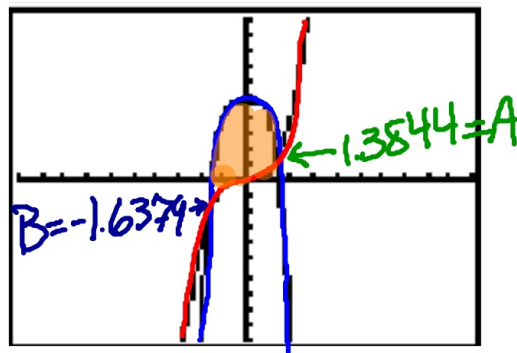
find intersection points
(to find bounds)

$$\int_3^{4.90799} -(x-3)^2 - 4\sin\left(\frac{\pi x}{3}\right) dx = 3.087$$

Find the area enclosed by

$$f(x) = 0.5x^3 \text{ and}$$

$$g(x) = 5 - x^4$$

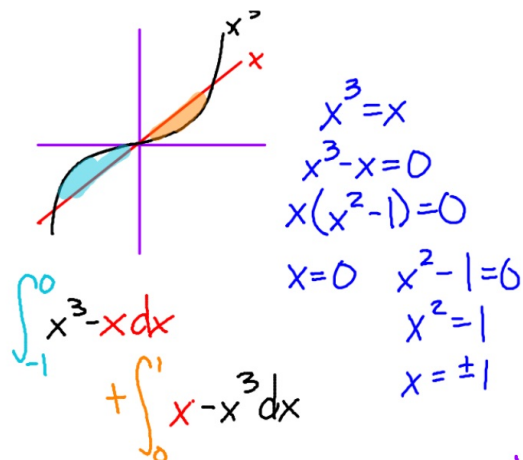


$$x = 1.3844 = A$$

$$B = -1.6379$$

$$\int_B^A (5 - x^4) - (0.5x^3) dx = 12.177$$

Find the area enclosed by
 $f(x) = x^3$ and
 $g(x) = x$



$$= \left. \frac{x^4}{4} - \frac{x^2}{2} \right|_{-1}^0 + \left. \frac{x^2}{2} - \frac{x^4}{4} \right|_0^1$$

$$\frac{0^4}{4} - \frac{0^2}{2} - \left(\frac{(-1)^4}{4} - \frac{(-1)^2}{2} \right) + \left(\frac{1^2}{2} - \frac{1^4}{4} \right) - \left(\frac{0^2}{2} - \frac{0^4}{4} \right)$$

$$- \left(\frac{1}{4} - \frac{1}{2} \right) + \frac{1}{2} - \frac{1}{4} = -\frac{1}{4} + \frac{1}{2} + \frac{1}{2} - \frac{1}{4} = 1 - \frac{2}{4} = \frac{1}{2}$$

pg 361 #3-42

multiples of 3