

Homework

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1 - 6 all, 9 - 12 all, 15 - 18 all,
37 - 46 all, 49 - 51 all

May 2-11:42 AM

$$12) \int_4^9 4\sqrt{r} - 3r\sqrt{r} \, dr$$

$$\int_4^9 4r^{1/2} - 3r^{3/2} \, dr$$

$$\frac{4r^{3/2}}{3/2} - \frac{3r^{5/2}}{5/2} \Big|_4^9$$

$$\frac{4(9)^{3/2}}{3/2} - \frac{3(9)^{5/2}}{5/2} - \left(\frac{4(4)^{3/2}}{3/2} - \frac{3(4)^{5/2}}{5/2} \right)$$

May 3-12:05 PM

$$\int_2^7 3 - |x-4| dx$$

$$\frac{Ea}{\int_0^r \sqrt{r^2 - x^2} dx}$$

$$A = \pi r^2$$

$$\frac{1}{4} \pi r^2$$

May 3-12:09 PM

Calculus for life Sciences

Section 7-5

May 13-10:02 PM

On a number line, how far apart are the following pairs of numbers?

22 and 17

5

$$22 - 17 = 22 - 17$$

13 and 26

13

4 and -12

16

$$4 - (-12) = 4 + 12$$

-3 and 16

19

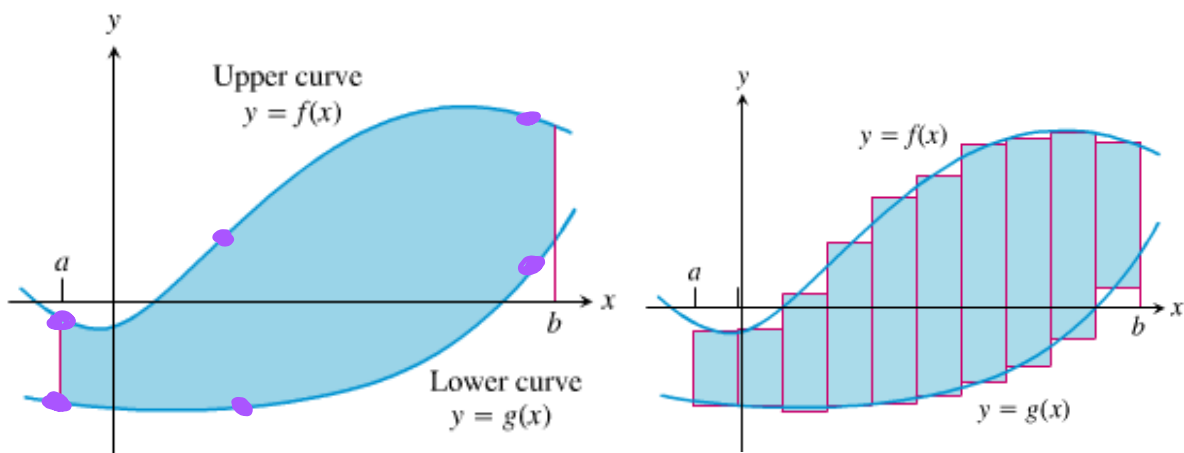
-17 and -92

75

$$-17 - (-92) = 92 - 17$$

May 2-11:11 AM

Area Between Curves



Apr 23-8:54 AM



DEFINITION Area Between Curves

If f and g are continuous with $f(x) \geq g(x)$ throughout $[a, b]$, then the **area between the curves $y = f(x)$ and $y = g(x)$ from a to b** is the integral of $[f - g]$ from a to b ,

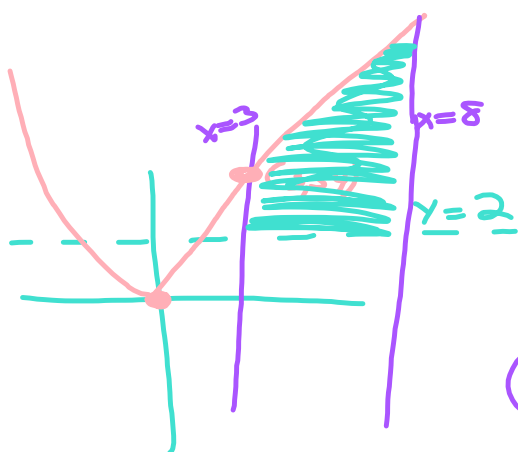
$$A = \int_a^b [f(x) - g(x)] dx.$$

$$F(x) - G(x) \Big|_a^b \\ (F(b) - G(b)) - (F(a) - G(a))$$

Apr 23-8:54 AM

Find the area enclosed by the given boundaries.

$$y = 2 ; x = 3 ; x = 8 ; y = 6x^2$$




$$\int_3^8 (6x^2 - 2) dx \\ \left[\frac{6x^3}{3} - 2x \right]_3^8$$

$$(2 \cdot 8^3 - 2 \cdot 8) - (2 \cdot 3^3 - 2 \cdot 3) \\ 1008 - 48 \\ 960$$

Feb 2-8:57 PM

Find the area enclosed by the given boundaries.

$y = x^4 - 8$; $y = -x^3 + 8x$



$f - g$

$$(-x^3 + 8x) - (x^4 - 8)$$

$$\int_{-1}^2 -x^3 + 8x - x^4 + 8 \, dx$$

$$-\frac{x^4}{4} + \frac{8x^2}{2} - \frac{x^5}{5} + 8x \Big|_{-1}^2$$

$$\left(-\frac{2^4}{4} + \frac{8 \cdot 2^2}{2} - \frac{2^5}{5} + 8 \cdot 2 \right) - \left(-\frac{(-1)^4}{4} + \frac{8(-1)^2}{2} - \frac{(-1)^5}{5} + 8(-1) \right)$$

$$21.6 + (+4.05)$$

$$25.65$$

$x^4 - 8 = -x^3 + 8x$

$$x^4 + x^3 - 8x - 8 = 0$$

$$x^3(x+1) - 8(x+1)$$

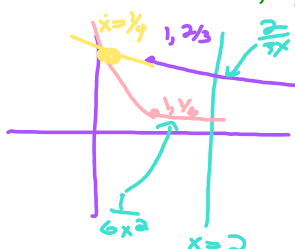
$$(x^3 - 8)(x+1) = 0$$

$$x = 2, -1$$

Feb 2-8:57 PM

Find the area enclosed by the given boundaries.

$x = 2$; $y = (6x^2)^{-1}$; $y = 2(3x)^{-1}$



$y = \frac{1}{6x^2}$; $y = \frac{2}{3x}$

$$\frac{1}{6x^2} = \frac{2}{3x}$$

$$3x = 12x^2$$

$$0 = 12x^2 - 3x$$

$$3x(4x - 1)$$

$$x = 0, \frac{1}{4}$$

$$\int_{1/4}^2 \frac{2}{3x} - \frac{1}{6x^2} \, dx$$

$$\int_{1/4}^2 \frac{2}{3} \cdot \frac{1}{x} - \frac{1}{6} \cdot x^{-2} \, dx$$

$$\frac{2}{3} \ln x - \frac{1}{6} (-x^{-1}) \Big|_{1/4}^2$$

$$\left(\frac{2}{3} \ln 2 - \frac{1}{6 \cdot 2} \right) - \left(\frac{2}{3} \ln \frac{1}{4} - \frac{1}{6(\frac{1}{4})} \right)$$

Feb 2-8:57 PM

Find the area in the 1st quadrant enclosed by the two functions.

$$y = 2x + 14$$

$$y = 3x^2 + 2x + 2$$

$$\int (2x+14) - (3x^2+2x+2)$$

$$\frac{2x^2}{2} + 14x - \frac{3x^3}{3} - \frac{2x^2}{2} - 2x$$

Feb 2-8:57 PM

Find the area enclosed by the given boundaries.

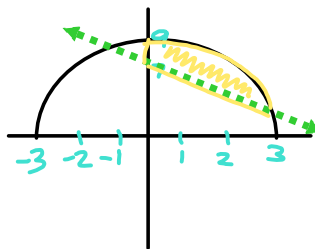
$$y = -x + 7 ; y = -x^2 + 9$$

$$-x + 7 = -x^2 + 9$$

$$x^2 - x - 2 = 0$$

$$(x+2)(x-1)$$

$$x = -1, 2$$



$$\int_{-1}^2 (-x^2 + 9) - (-x + 7) dx$$

$$\int_{-1}^2 -x^2 + x + 2 dx$$

$$\left. -\frac{x^3}{3} + \frac{x^2}{2} + 2x \right|_{-1}^2$$

$$-\frac{2^3}{3} + \frac{2^2}{2} + 2(2) - \left(-\frac{(-1)^3}{3} - \frac{1^2}{2} + 2(-1) \right)$$

HELLO hello hello

Feb 2-8:57 PM

Homework

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1 - 17 odd, 10, 21, 22, 23

May 13-10:02 PM