

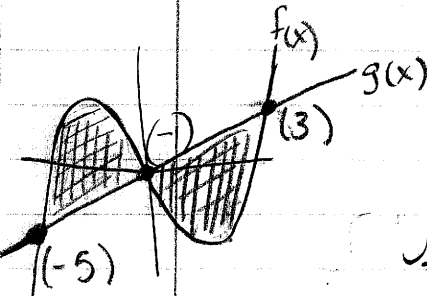
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Math 060
4/14

Practice problems P. 434 # 14, 22, 37, 45, 51, 53, 54

#14 $f(x) = x^3 + 3x^2 - 9x - 12$

$g(x) = 4x + 3$



$$\int_{-5}^{-1} (f(x) - g(x)) + \int_{-1}^3 (g(x) - f(x))$$

$$\int_{-5}^{-1} (x^3 + 3x^2 - 9x - 12 - 4x - 3) + \int_{-1}^3 (4x + 3 - x^3 - 3x^2 + 9x + 12)$$

$$\int_{-5}^{-1} (x^3 + 3x^2 - 13x - 15) + \int_{-1}^3 (-x^3 - 3x^2 + 13x + 15)$$

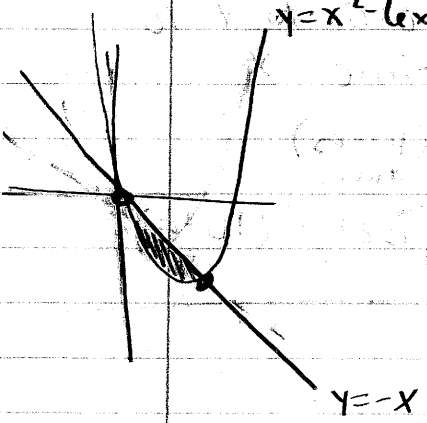
$$\int_{-5}^{-1} (\frac{1}{4}x^4 + x^3 - 6\frac{1}{2}x^2 - 15x) + \int_{-1}^3 (-\frac{1}{4}x^4 - x^3 + 6\frac{1}{2}x^2 + 15x)$$

$$(7.75 \oplus 56.25) + (56.25 \ominus 7.75)$$

$$(64) + (64)$$

Area = 128

22. $y = x^2 - 6x$ $y = -x$



$$\int_0^5 (-x) - (x^2 - 6x) = -x^2 + 5x$$

$$\int_0^5 -\frac{1}{3}x^3 + \frac{5}{2}x^2$$

$$(20.8 - 0) = \mathbf{20.8}$$

Bio Calc: P 434: 14, 22, 37, 45, 51, 53, 54

(14) $f(x) = x^3 + 3x^2 - 9x - 12$, $g(x) = 4x + 3$

$g(x) \geq f(x)$ at $[-5, -1]$, $f(x) \geq g(x)$ at $[-1, 3]$

$\int_{-5}^{-1} f(x) - g(x) dx + \int_{-1}^3 g(x) - f(x) dx$

$\int_{-5}^{-1} (x^3 + 3x^2 - 9x - 12) dx - (4x + 3) dx + \int_{-1}^3 (4x + 3) - (x^3 + 3x^2 - 9x - 12) dx$
 $\left[\frac{x^4}{4} + x^3 - \frac{9}{2}x^2 - 12x \right]_{-5}^{-1} + \left[(2x^2 + 3x) - \left(\frac{x^4}{4} + x^3 - \frac{9}{2}x^2 - 12x \right) \right]_{-1}^3$

$\left[\frac{1}{4} + (-1)^3 - \frac{9}{2}(-1)^2 - 12(-1) \right] - \left[2(-1)^2 + 3(-1) \right] - \left[\frac{(-5)^4}{4} + (-5)^3 - \frac{9}{2}(-5)^2 - 12(-5) \right] - \left[2(-5)^2 + 3(-5) \right]$

$\left[0.25 + 1 - \frac{9}{2} + 12 \right] - (2 - 3) - (156.25 - 112.5 + 60) - (50 - 15)$

$8.75 + 1 - 156.25 + 112.5 - 60 = 35 - 129$

$\left[(2(3)^2 + 3(3)) - \left(\frac{3^4}{4} + 3^3 - \frac{9}{2}(3)^2 - 12(3) \right) \right] - (2(-1)^2 + 3(-1)) - (8.75)$

$18 + 9 - 20.25 - 9 + 40.5 + 36 - 2 + 3 - 8.75 = 66.5$

Area = $-129 + 66.5 = -62.5$

Craig Timmons
Alivia Wardyn

p. 434

14, 22, 37, 45, 51, 53, 54

$$14. \int_{-1}^3 ((4x+3) - (x^3+3x^2-9x-12)) dx$$
$$\int_{-1}^3 (-x^3 - 3x^2 + 13x + 15) dx$$
$$-\frac{1}{4}x^4 - x^3 + 6.5x^2 + 15x$$

$$56.25 + 7.75 = 64$$

$$\int_{-5}^0 (\frac{1}{4}x^4 + x^3 - 6.5x^2 - 15x)$$

$$7.75 + 456.25$$

64

128

22

$$y = x^2 - 6x$$

$$y = -x$$

$$x^2 - 6x = -x$$

$$x^2 - 5x = 0$$

$$x(x-5) = 0$$

$$0 \quad 5$$

$$\int_{-5}^0 ((-x) - (x^2 - 6x))$$

$$(-x^2 + 5x)$$

$$\frac{1}{3}x^3 + 2.5x^2$$

$$-20.75$$

Maggie
Paul
Ian

Homework pg 434 (14, 22, 37, 45, 51, 53, 54)

14) $f(x) = x^3 + 3x^2 - 9x - 12$ $\int_{-5}^{-1} (x^3 + 3x^2 - 9x - 12) - (4x + 3)$
 $g(x) = 4x + 3$

$\frac{1}{4}(-1) - \frac{13}{2} + 15 = 7.75$ $\int_{-5}^{-1} x^3 + 3x^2 - 13x - 15$
 $\frac{1}{4}(-1)^4 + (-1)^3 - \frac{13}{2}(-1)^2 - 15(-1)$
 $= 7.75$
 $\frac{1}{4}(-5)^4 + (-5)^3 - \frac{13}{2}(-5)^2 - 15(-5)$ anti = $\frac{1}{4}x^4 + 1x^3 - \frac{13}{2}x^2 - 15x$
 $= 156.25 - 125 - 162.5 + 75 = -56.25$

$7.75 + + 56.25 = 64$ area of left side

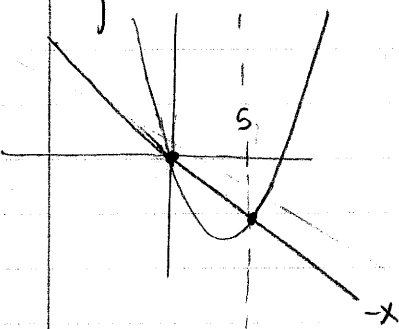
$\frac{13}{2}(3)^2 + 15(3) - \frac{1}{4}(3)^4 - 1(3)^3$ $\int_{-1}^3 (4x + 3) - (x^3 + 3x^2 - 9x - 12)$
 $= 58.5 + 45 - 20.25 - 27 = 56.25$

$\frac{13}{2}(-1)^2 + 15(-1) - \frac{1}{4}(-1)^4 - 1(-1)^3$ $\int_{-1}^3 13x + 15 - x^3 - 3x^2$
 $= 13/2 - 15 - 1/4 + 1 = -7.75$

$56.25 + + 7.75 = 64$ area of right anti = $\frac{13}{2}x^2 + 15x - \frac{1}{4}x^4 - 1x^3$

$64 + 64 = 128$

22) $y = x^2 - 6x$
 $y = -x$



$x^2 - 6x = -x$ $\int_0^5 -x - (x^2 - 6x)$
 $+x \quad +x$

$x^2 - 5x = 0$ $\int_0^5 -x - x^2 + 6x$
 $x(x - 5) = 0$
 $x = 0, 5$

anti $-\frac{1}{2}x^2 - \frac{1}{3}x^3 + 3x^2$

$-\frac{1}{2}(0)^2 - \frac{1}{3}(0)^3 + 3(0)^2 = 0$

$-\frac{1}{2}(5)^2 - \frac{1}{3}(5)^3 + 3(5)^2 =$
 $-12.5 - 112.5 + 75$