

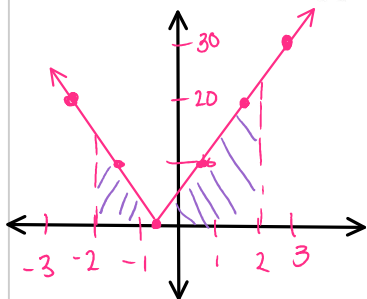
Name Answer Key

Date _____

Calc I H - Quiz Review 4.3-4.4

Period _____

Do Now: Evaluate $\int_{-2}^2 |10x+5| dx$



$$10x+5=0$$

$$x = -\frac{1}{2}$$

$$\int_{-2}^{-1/2} (-10x-5) dx + \int_{-1/2}^2 (10x+5) dx$$

$$= (5x^2 - 5x)_{-2}^{-1/2} + (5x^2 + 5x)_{-1/2}^2$$

$$= -\frac{5}{4} + \frac{5}{2} - (-20 + 10) + 20 + 10 - \left(\frac{5}{4} - \frac{5}{2}\right)$$

$$= -\frac{5}{4} + \frac{5}{2} - (-20 + 10) + 20 + 10 - \left(\frac{5}{4} - \frac{5}{2}\right)$$

$$= -\frac{5}{4} - \frac{5}{4} + \frac{5}{2} + \frac{5}{2} + 10 + 30 = -\frac{5}{2} + 45 = \boxed{42.5}$$

Practice 1: Evaluate each of the following using the given information and the properties of integration.

Given: $\int_2^7 dx = 5$; $\int_2^{12} f(x) dx = 14$; $\int_2^7 f(x) dx = 3$; $\int_2^7 g(x) dx = -5$

a. $\int_2^7 3f(x) dx = 3(3) = 9$

b. $\int_7^2 g(x) dx = -\int_2^7 g(x) dx = -(-5) = 5$

c. $\int_2^7 f(x) + g(x) dx = 3 + (-5) = -2$

d. $\int_2^2 f(x) - g(x) dx = 0$

e. $\int_2^7 [g(x) - f(x) + 6] dx =$

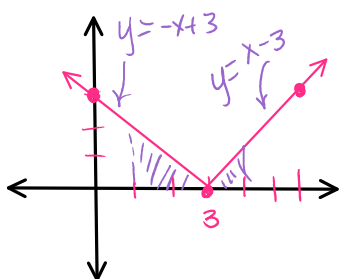
$$\int_2^7 g(x) dx - \int_2^7 f(x) dx + \int_2^7 6 dx$$

$$= -5 - 3 + 6(5) = 22$$

f. $\int_7^{12} f(x) dx = \int_2^{12} f(x) dx - \int_2^7 f(x) dx$

$$= 14 - 3 = 11$$

Practice 2: Evaluate $\int_1^4 (3 - |x-3|) dx$



$$x-3=0$$

$$x=3$$

$$= \int_1^4 3 dx - \int_1^4 |x-3| dx$$

$$= 3(3) - \left(\int_1^3 (-x+3) dx + \int_3^4 (x-3) dx \right)$$

$$= 9 - \left(\left(-\frac{x^2}{2} + 3x \right)_1^3 + \left(\frac{x^2}{2} - 3x \right)_3^4 \right)$$

$$= 9 - \left(-\frac{9}{2} + 9 - \left(-\frac{1}{2} + 3 \right) + 8 - 12 - \left(\frac{9}{2} - 9 \right) \right)$$

$$= 9 - (4.5 - 2.5 - 4 + 4.5)$$

$$= 9 - (2.5) = \boxed{6.5}$$

