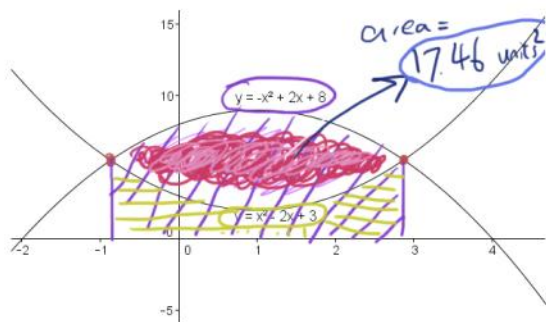


# Integration lesson 8

Thursday, December 19, 2013

6:15 AM

Area bounded by 2 curves



- ① Find points of intersection
- ② Find the difference of the integrals
- ③ Evaluate the definite integral

$$\int f(x) dx + \int g(x) dx = \int (f(x) + g(x)) dx$$
$$\int f(x) dx - \int g(x) dx = \int (f(x) - g(x)) dx$$

$$\int -x^2 + 2x + 8 dx - \int x^2 - 2x + 3 dx$$
$$= \int (-x^2 + 2x + 8 - (x^2 - 2x + 3)) dx$$
$$= \int -x^2 + 2x + 8 - x^2 + 2x - 3 dx$$
$$= \int -2x^2 + 4x + 5 dx$$

$$\int_{-0.87}^{2.87} -2x^2 + 4x + 5 dx$$

$$= \left[ \frac{-2x^3}{3} + \frac{24x^2}{81} + 5x \right]_{-0.87}^{2.87}$$

$$= \left[ \frac{-2 \times 2.87^3}{3} + 2 \times 2.87^2 + 5 \times 2.87 \right]$$

$$- \left[ \frac{-2 \times (-0.87)^3}{3} + 2 \times -0.87^2 + 5 \times -0.87 \right]$$

$$= 15.06 - -2.3972$$

$$= 17.46 \text{ units}^2$$