

Section 4.7

Integration using Completing the square

Let's review how to complete the square

- $(x + 5)^2 =$

$$x^2 - 12x + 36 =$$

- $x^2 + 4x + 7$

$$3x^2 - 30x + 45$$

- $x^2 - 8x + 9$

$$x^2 + 5x - 3$$

- $x^2 + 12x - 4$

$$2x^2 + 15x + 1$$

$$\int \frac{1}{x^2 - 6x + 13} dx$$

- Should I do long division?

No, not an improper fraction.

- U-sub?

No, numerator is not the derivative of denominator

- Partial Fractions?

No, can't factor the denominator.

- What if I complete the square of the denominator?

$$\int \frac{1}{x^2 - 6x + 13} dx$$

$$\int \frac{2x+2}{x^2+8x+20} dx$$

- Should I do long division?
No, not an improper fraction.
- Partial Fractions?
No, can't factor the denominator.
- U-sub?
No, numerator is not the derivative of denominator,
- But could I make it the derivative?

$$\int \frac{2x+2}{x^2+8x+20} dx$$

Find the area of the region bounded by the graph of $f(x) = \frac{1}{\sqrt{1-2x-x^2}}$ and the lines $x = -1$ and $x=0$.