

Calculus BC

Section 5.7 - Inverse Trigonometric Functions - Integration

- Obj: - To integrate functions whose antiderivatives involve inverse trig functions.
- To use completing the square to integrate a function.

Integration Formulas:

$\int \frac{1}{\sqrt{1-u^2}} du = \sin^{-1} u + c$	$\int \frac{1}{\sqrt{a^2 - u^2}} du = \sin^{-1} \frac{u}{a} + c$
$\int \frac{1}{1+u^2} du = \tan^{-1} u + c$	$\int \frac{1}{a^2 + u^2} du = \frac{1}{a} \tan^{-1} \frac{u}{a} + c$
$\int \frac{1}{ u \sqrt{u^2 - 1}} du = \sec^{-1} u + c$	$\int \frac{1}{ u \sqrt{u^2 - a^2}} du = \frac{1}{a} \sec^{-1} \frac{ u }{a} + c$

1.
$$\int \frac{1}{4+9x^2} dx$$

-looks like _____

$a =$

$u =$

$du =$

$$2. \int \frac{x^2}{\sqrt{16-x^6}} dx$$

-looks like _____

$$a =$$

$$u =$$

$$du =$$

$$3. \int \frac{dx}{\sqrt{4-25x^2}}$$

-looks like _____

$$a =$$

$$u =$$

$$du =$$

Separating a Fraction

$$4. \int \frac{x+2}{\sqrt{4-x^2}} dx$$

If we use $u =$

then $du =$

this will leave the extra $+ 2$

-Separate the fraction

Completing the square

(consider this method in the case of a quadratic)

$$5. \int \frac{dx}{x^2 - 8x + 20}$$

$$= \int$$

Complete the square for the trinomial $x^2 - 8x + 20$

-looks like _____

$a =$

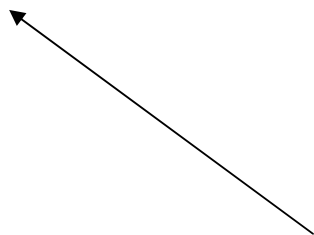
$u =$

$du =$

6. $\int \frac{dx}{\sqrt{3x - x^2}}$

$= \int$

Complete the square for the trinomial $-x^2 + 3x$



-looks like _____

$a =$

$u =$

$du =$