Inverse Trigonometric Functions: Integration and Completing the Square
Section 5.7a

We’re going to use the relationship between differentiation and integration to find the integrals involving inverse trigonometric functions. Find \( \frac{dy}{du} \) of the equation below.

\[ y = \arcsin \frac{u}{a} + C \]

Therefore, \( \int \frac{du}{\sqrt{a^2 - u^2}} \) is ______________

We have two additional integrals that we need to commit to memory. They are:

\[ \int \frac{du}{a^2 + u^2} = \] ______________.

\[ \int \frac{du}{u\sqrt{u^2 - a^2}} = \] ______________.
Now, we can use this information to integrate problems like the ones below.

1. \[ \int \frac{dx}{2 + 9x^2} \]

2. \[ \int \frac{dx}{\sqrt{4 - x^2}} \]