Other Methods of Integration

W-up: For each example, identify what you will let "u" equal and explain(but do not finish) how you would finish the integration.

A) $\int \frac{5x}{5x^2-3}\,dx$ B) $\int \frac{3}{9x^2+4}\,dx$ C) $\int \frac{7x^2}{7x^2+4}\,dx$ D) $\int \frac{x+2}{\sqrt{16-9x^2}}\,dx$

Other methods to try when integrating:

"Adding Zero" Adding and subtracting the same value or expression to help "u"-substitution work out.

EX) $\int \frac{2x}{x^2+6x+10}\,dx$

Since "u" = $x^2+6x+10$ would yield a $\frac{du}{dx}=2x+6$

Rewrite the integral as $\int \frac{2x+6-6}{x^2+6x+10}\,dx$ or $\int \frac{2x+6}{x^2+6x+10}\,dx-\int \frac{6}{x^2+6x+10}\,dx$

and solve remaining integrals!

EX) $\int \frac{1}{1+e^x}\,dx$

Multiply numerator and denominator by the conjugate(when denominator contains a binomial with a trig. function)

EX) $\int \frac{1}{1+\sin x}\,dx$

EX) $\int \frac{1}{\sec x - 1}\,dx$

"THINK IDENTITIES"