Solutions Tutorial Exercises

Week 10

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Determine the following Integrals

1. $\int \frac{1-x}{3+2x-x^2}\,dx$
   Ans: $\frac{1}{2}ln(3+2x-x^2)+C$
   or using absolute value to make argument to ln greater than 0
   $\frac{1}{2}ln|3+2x-x^2|+C$
   Note: $3+2x-x^2>0$ when $-1<x<3$
2. $\int \frac{3x}{9+x^2}\,dx$
   Ans: $\frac{3}{2}ln(9+x^2)+C$
3. $\int \frac{3}{9+x^2}\,dx$
   Ans: $tan^{-1}\frac{x}{3}+C$
4. $\int cos^4 x\,dx$
   Ans: $\frac{3}{8}x+\frac{1}{4}sin(2x)+\frac{1}{32}sin(4x)$.