1. We are interested in evaluating $\int \frac{5x-3}{x^2-2x-3}dx$. Proceed in the steps indicated below.
   (a) Find A and B such that $\frac{5x-3}{x^2-2x-3} = \frac{A}{x+1} + \frac{B}{x-3}$.
   (b) Identify what is the $\int \frac{1}{x+1}dx$ and $\int \frac{1}{x-3}dx$
   (c) Solve the original problem.

   Ans: A=2,B=3. $\int \frac{5x-3}{x^2-2x-3}dx = 2\ln(\mid x+1 \mid) + 3\ln(\mid x-3 \mid)$.

2. We are interested in evaluating $\int \frac{\cos x}{\sin^2 x + \sin x - 6}dx$. Proceed in the steps indicated below.
   (a) First do a substitution so that the function to be integrated looks like a rational function (i.e..$\frac{polynomial}{polynomial}$)
   (b) Then follow the steps like the previous problem.

   Ans:$\frac{1}{5}(-ln \mid \sin x + 3 \mid + \ln \mid \sin x - 2 \mid) + C$

3. Do the following: $\int x \ln x dx, \int x^3 e^{-0.08x}dx$
   (a) First, identify u and v' to use in the integration by parts formula.
   (b) Find v and u'.
   (c) Use the integration by parts formula.

   Ans: $\frac{x^2}{2}\ln(x) - \frac{x^2}{4} + C, \frac{x^3e^{-0.08x}}{-0.08} - \frac{3x^2e^{-0.08x}}{(0.08)^2} - \frac{6e^{-0.08x}(0.08x-1)}{(0.08)^3} + C$

[2] **Office hours:** Monday:1:30-2:30,3:30-4:00pm, Tuesday:11:30-12:30 am, 3:30-4:30 pm, Wednesday: 10:30-11:30 am