



## Integration III - Tutoring Sheet #17

Evaluate the following integrals:

1. Show that :  $\frac{t^2 + 4t + 4}{t + 3} = t + 1 + \frac{1}{t + 3}$

Hence find :  $\int_1^2 \frac{t^2 + 4t + 4}{t + 3} dt$

2. Determine  $\int \frac{x - 3}{x^2 - 6x + 5} dx$

3. Evaluate the following integrals:

a.  $\int \frac{x}{x^2 - x - 2} dx$

b.  $\int \frac{dx}{x^2 + 4x + 3}$

c.  $\int x^2 e^x dx$

d.  $\int t \ln t dt$

e.  $\int \frac{2x - 1}{x^2 - x + 3} dx$

f.  $\int \frac{\ln x}{x^2} dx$

g.  $\int x^2 \sqrt{x + 3} dx$

h.  $\int x \sin x dx$