MATH 1500, Homework 11

Due date: Fri, 22 January

1. Evaluate the following indefinite integrals.

$$(a)\int_0^1 x^2 \arctan x\,dx \quad (b)\int \frac{x^2}{(x^2+1)^2}dx, \quad (c)\int \frac{x\,dx}{x^2-2x+3}$$
$$(d)\int \frac{dx}{(4x-x^2)^{3/2}} \quad (e)\int \frac{4}{x^4-1}dx \quad (f)\int \frac{dx}{x^3+x^2+x}$$
$$(g)\int \frac{\sqrt{3x^2-1}}{x} \quad (h)\int \frac{d\theta}{\tan\theta+\sin\theta}$$

2. Find the following definite integrals.

$$(a)\int_0^{\pi/2} (\cos x)^7\,dx \quad (b)\int_{-\ln 2}^0 e^x\sqrt{1-e^{2x}}dx \quad (c)\int_0^{\pi/2} \frac{\cos x}{\sqrt{1+\sin^2 x}}dx$$