

F'04

Math 253 (L02)

Final Review

1. Solve

(i) $\int \frac{x}{x^2-x+2} dx$

(ii) $\int \frac{\sqrt{x^2-1}}{x} dx$

(iii) $\int \sqrt{4x^2+8x+25} dx$

(iv) $\int \frac{\sqrt{9+4x^2}}{x} dx$

(v) $\int_0^{\frac{1}{2}} x^2 \sin^{-1} x dx$

(vi) $\int_2^{\infty} \frac{\ln x}{x} dx$

(vii) $\int_1^{\infty} \frac{\ln x}{x^3} dx$

(viii) $\int_0^{\pi/4} x \tan^{-1} 2x dx$

(ix) $\int_0^{\infty} x^3 e^{-x} dx$

2 pg 559, 12, 16, 27, 29.

3. pg 645, 6, 8

4. Solve

(i) $\frac{dy}{dx} = y + 2x, y(1) = 1$

(ii) $\frac{dy}{dx} = \frac{y}{x} + x, y(1) = 1$

(iii) $\frac{dv}{dt} = 32 - \frac{v}{2}, v(0) = 0$

(iv) $\frac{d^2x}{dt^2} = 32 - \frac{1}{2} \frac{dx}{dt}, x(0) = 0, x'(0) = 10$

$$(v). \frac{dy}{dx} + 2y = e^{3x}, \quad y(0) = 1$$

$$(vi) \quad 2 \frac{dy}{dx} + y = e^{-x}$$

$$(vii) \quad y'' + 2y' + y = 0, \quad y(0) = 0, \quad y'(0) = 1$$

$$(viii) \quad 3y'' + y' + y = 0$$

§ pg 1147, 22, 24, 28, 30

pg 1154, 7, 10, 11, 12, 13,

GOOD LUCK !!!