

Winter '04

MATH 253 (L03)

Final Review

1. Solve

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

(ii)  $\int \frac{\sqrt{4x^2-1}}{x} dx$

(iii)  $\int x^3 e^{-3x} dx$

(iv)  $\int \sqrt{1+4x^2} dx$

(v)  $\int \sqrt{1+\frac{x^2}{9}} dx$

(vi)  $\int x \sin^{-1} 2x dx$

(vii)  $\int x \tan^{-1} 2x dx$

(viii)  $\int_1^3 \frac{dx}{(3-x)^{1/2}}$

(ix)  $\int \sqrt{x} \sqrt{1+\frac{1}{x}} dx$

2. Find the arc length of (i)  $y = \ln x$ ,  $1 \leq x \leq 2$ ,

(ii)  $y^2 = 4x$ ,  $0 \leq y \leq 2$ .

3. Pg 559, prob. 12, 14, 15,

4. Pg 607, prob. 11, 17, 18.

5. Pg. 636, prob. 7, 8, 9, 19, 20.

6. Solve, by two methods,

(i)  $y' = xy - 3x$

(ii)  $2y' - x^2 y = 3x^2$

7. Pg. 1147, 18, 23, 26,

8. Pg. 1154, 8, 9, 10, 22, 23,

Good Luck!