MTH 162 Homework 5

Do the first four problems. Due: Feb 5, 2014 (Wednesday). Hand in to me during the class.

**Compulsory:**

Ex 5.6

39–48. Evaluate the integral.

39. \[ \int_{1/\sqrt{3}}^{\sqrt{3}} \frac{8}{1 + x^2} \, dx \]

40. \[ \int_{1/2}^{1/\sqrt{2}} \frac{4}{\sqrt{1 - x^2}} \, dx \]

42. \[ \int_{0}^{\sqrt{3}/4} \frac{dx}{1 + 16x^2} \]

45. \[ \int \frac{t^2}{\sqrt{1 - t^6}} \, dt \]
Recommended: (These types of questions may also appear in the exams)

Ex 5.6

39–48 Evaluate the integral.

41. \[ \int_{0}^{1/2} \frac{\sin^{-1}x}{\sqrt{1 - x^2}} \, dx \]

43. \[ \int \frac{1 + x}{1 + x^2} \, dx \]

44. \[ \int_{0}^{\pi/2} \frac{\sin x}{1 + \cos^2 x} \, dx \]

46. \[ \int \frac{1}{x\sqrt{x^2 - 4}} \, dx \] (hint: this needs the formula for the derivative of sec\(^{-1}\) x)

47. \[ \int \frac{dx}{\sqrt{x}(1 + x)} \]

48. \[ \int \frac{e^{2x}}{\sqrt{1 - e^{4x}}} \, dx \]