HOMEWORK DAY 15 – *Partial Fractions – quadratic factors §7.4*

1. §7.4: 1b

2. §7.4: 5a

3. §7.4: 5b

4. §7.4: 20

5. §7.4: 24

6. §7.7: 2
   Hint: You may use the following fact for a positive function f:
   f concave up implies $M_n < \int_a^b f(x)\,dx$, and f concave down implies $M_n > \int_a^b f(x)\,dx$

7. §7.7: 8(a,b)

8. §7.7: 12(a,b)

9. §7.7: 5(a)

HOMEWORK DAY 17 – *Improper integrals §7.8*

10. §7.8:2

Determine if the following integrals converge or diverge. Evaluate those that converge. Carefully show all your work.

11. $\displaystyle\int_0^1 \frac{dx}{x}$

12. $\displaystyle\int_0^1 \frac{1}{\sqrt{1-x^2}}\,dx$

13. $\displaystyle\int_{-2}^{7} \frac{dx}{\sqrt[4]{x+2}}$

14. $\displaystyle\int_{-1}^{2} \frac{1}{x^4}\, dx$

15. $\int_0^1 \frac{1}{1-3s}\,ds$

16. $\int_0^1 \ln x \, dx$

Determine if the following integrals converge or diverge. Evaluate those that converge. Carefully show all your work.

17. $\displaystyle\int_1^\infty \ln x \, dx$

18. $\displaystyle\int_0^\infty \cos t \, dt$

19. $\int_1^\infty \frac{dx}{x}$

20. $\int_2^\infty \frac{dx}{x^2}$

21. $\displaystyle\int_2^\infty \frac{dx}{4+x^2}$

22. $\displaystyle\int_0^\infty xe^{-x^2}\,dx$

23. $\displaystyle\int_e^{\infty} \frac{dx}{x(\ln x)^2}$