MATH 17B — Sec. 6.1 AND 6.2 – EXTRA PROBLEMS

I. USE THE DEFINITION OF THE DEFINITE INTEGRAL AS A LIMIT OF RIEMANN SUMS TO EVALUATE THE FOLLOWING INTEGRALS:

1. $\int_1^4 (x^2+6x)\,dx$, USING A PARTITION INTO n EQUAL SUBINTERVALS AND RIGHT ENDPOINTS AS SAMPLING NUMBERS.

2. $\int_0^2 (x^3+15x^2)\,dx$, USING A PARTITION INTO n EQUAL SUBINTERVALS AND RIGHT ENDPOINTS AS SAMPLING NUMBERS.*

3. $\int_a^b \frac{1}{x^2}\,dx$ FOR $0<a<b$, USING A GENERAL PARTITION OF $[a,b]$ AND SAMPLING NUMBERS GIVEN BY $c_i = \sqrt{x_{i-1}x_i}$ FOR $1 \le i \le n$.

II. USE THE FUNDAMENTAL THEOREM OF CALCULUS TO EVALUATE THE FOLLOWING DEFINITE INTEGRALS:

4. $\int_0^2 (x^3+16x)\,dx$

5. $\int_{-1}^0 (4x+10)\,dx$

6. $\int_0^3 (x-4)(x+2)\,dx$

7. $\int_1^5 \frac{9x+5}{x^2}\,dx$

8. $\int_1^4 \frac{3x+8}{\sqrt{x}}\,dx$

9. $\int_0^{\pi/3} (4\cos x + 6\sec^2 x)\,dx$

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* USE THE FORMULA $\boxed{\sum_{i=1}^{n} i^3 = \frac{n^2(n+1)^2}{4}}$
