Math 112
Homework 2 Solutions

Section 8.2

8.2 #5: (a) $\frac{2}{x+1} + \frac{3}{x+2} = \frac{5x+7}{(x+1)(x+2)}$

(b) $\int \frac{5x+7}{(x+1)(x+2)} = 2\ln|x+1| + 3\ln|x+2| + C$

8.2 #16: (a) $\frac{6}{(x-2)(x^2-1)} = \frac{2}{x-2} - \frac{3}{x-1} + \frac{1}{x+1}$

(b) $\int \frac{6}{(x-2)(x^2-1)} = 2\ln|x-2| - 3\ln|x-1| + \ln|x+1| + C$

8.2 #26: $\frac{2-x}{x^2(x+2)} = \frac{-1}{x} + \frac{1}{x^2} + \frac{1}{x+2}$, so

$$\int \frac{2-x}{x^2(x+2)}\, dx = -\ln|x| - \frac{1}{x} + \ln|x+2| + C.$$

8.2 #28(c): $\frac{4x+5}{(x-2)(x+3)} = \frac{13/5}{x-2} + \frac{7/5}{x+3}$. Thus

$$\int \frac{4x+5}{(x-2)(x+3)}\, dx = \frac{13}{5}\ln|x-2| + \frac{7}{5}\ln|x+3| + C.$$

8.2 #33: $\ln|x-2| + \ln|x+3| + C$

8.2 #34: $\frac{2}{3}\ln|x-1| + \frac{1}{3}\ln|x+2| + C$

8.2 #36: $2\ln|x| - \ln|2x-1| - \frac{3}{2}\frac{1}{2x-1} + C$

Section 5.6

5.6 #7: $2 \cdot 3 + 2 \cdot 6 + 2 \cdot 3 = 24$

5.6 #8: $2 \cdot f(1) + 2 \cdot f(3) + 2 \cdot f(5) = 28$

5.6 #16: $L_4 = 6$, $R_4 = 14$. The actual value of the integral is 28/3. In case you want to try the midpoint and trapezoid sums, $M_4 = 9$ and $T_4 = 10$.