5.1

1 $\sum_{i=1}^{4}(i)^3$ expand the sum

11 $1+x+x^2+x^3+\ldots+x^n$ Sigma-notation

16 $\sum_{k=-5}^{m}\frac{1}{k^2+1}$ form: $\sum_{i=1}^{n} f(i)$

19 $\sum_{k=1}^{n}(\pi^k-3)$ closed form

24 sum 5.1.11

31 $\sum_{j=1}^{m}(2^j-2^{j-1})$ telescope sum

5.3

1 $f(x)=x$ on $[0,2]$ with $n=8$ Evaluate $L(f,P_n)$ and $U(f,P_n)$

7 $f(x)=x$ $[a,b]=[0,1]$ What is $\int_a^b f(x)dx$

11 $\lim_{n\to\infty}\sum_{i=1}^{n}\frac{1}{n}\sqrt{\frac{i}{n}}$

12 $\lim_{n\to\infty}\sum_{i=1}^{n}\frac{1}{n}\sqrt{\frac{i-1}{n}}$

} definite integral

5.4

1 $\int_a^b f(x)dx+\int_b^c f(x)dx+\int_c^a f(x)dx$ Simplify

3 $\int_{-2}^{2}(x+2)dx$

11 $\int_{-1}^{1}(u^5-3u^3+\pi)du$

13 $\int_{-4}^{4}(e^x-e^{-x})dx$

} Interpret the area

27 $f(x)=x+2$ over $[0,4]$ Average value

35 Find $\int_0^2 g(x)dx$ where $g(x)=\begin{cases}x^2 & 0\le x\le 1\\ x & 1<x\le 2\end{cases}$

5.5

1 $\int_0^2 v^3 dx$

3 $\int_{1/2}^1 \frac{1}{x^2} dx$

5 $\int_{-1}^2 (3x^2 - 4x + 2) dx$

11 $\int_{\frac{\pi}{4}}^{\frac{\pi}{3}} \sin(\theta) d\theta$

13 $\int_{-\pi}^{\pi} e^x dx$

} Evaluate the definite integral

23 Find R above $y = x^2 - 4x$ and below x-axis

39 $\frac{d}{dx} \int_2^x \frac{\sin t}{t} dt$

41 $\frac{d}{dx} \int_{x^2}^0 \frac{\sin t}{t} dt$

} Find indicated derivatives

5.6 Variable substitution

1 $\int e^{5-2x} dx$

5 $\int \frac{x}{(4x^2+1)^5} dx$

7 $\int x e^{x^2} dx$

9 $\int \frac{\cos x}{4 + \sin^2 x} dx$

19 $\int \tan x \ln(\cos x) dx$

21 $\int \frac{1}{x^2 + 6x + 13} dx$

43 $\int_e^{e^2} \frac{1}{t \ln t} dt$

5.7 Areas between graphs

3 $y = x^2 - 5$ $y = 3 - x^2$

7 $y = x^3$ $y = x$

9 $y = x^3$ $x = y^2$

6.1 Evaluate integrals

1 $\int x \cos x dx$

5 $\int x^3 \ln x dx$

7 $\int \arctan x dx$

13 $\int e^{2x} \sin 3x dx$

19 $\int \cos(\ln x) dx$

6.2 Evaluate integrals

5 $\int \frac{1}{x^2 - 9} dx$

9 $\int \frac{x^2}{x^2 + x - 2} dx$

13 $\int \frac{1}{1 - 6x + 9x^2} dx$

21 $\int \frac{1}{x^3 - 4x^2 + 3x} dx$

23 $\int \frac{1}{(x^2 - 1)^2} dx$

A $\int \frac{1}{x^2(1 - x)} dx$

6.3 Evaluate integrals

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

3 $\int \frac{x^2}{\sqrt{9 - x^2}} dx$

9 $\int \frac{x^3}{\sqrt{9 + x^2}} dx$

17 $\int \frac{1}{x^2 + 2x + 10} dx$

29 $\int \frac{1}{2 + \sqrt{x}} dx$

6.5

1 $\int_2^\infty \frac{1}{(x + 1)^2} dx$

5 $\int_{-1}^1 \frac{1}{(x + 1)^{2/3}} dx$

} Evaluate integral, or show convergence

23 Find area below $y = 0$, above $y = \ln x$ to the right of $x = 0$

31 $\int_0^\infty \frac{1}{1 + \sqrt{x}} dx$

35 $\int_{-1}^1 \frac{e}{x + 1} dx$

} integral converges or diverges