Math 21B - Homework Set 9

Section 8.4: Evaluate the following integrals.

1. $\displaystyle\int \frac{x+4}{x^2+5x-6}\,dx$

2. $\displaystyle\int \frac{x+3}{2x^3-8x}\,dx$

3. $\displaystyle\int_0^1 \frac{x^3}{x^2+2x+1}\,dx$

4. $\displaystyle\int_0^1 \frac{dx}{(x+1)(x^2+1)}$

5. $\displaystyle\int_1^{\sqrt{3}} \frac{3t^2+t+4}{t^3+t}\,dt$

6. $\displaystyle\int \frac{x^4}{x^2-1}\,dx$

Section 8.7: Evaluate the following integrals.

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

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

3. $\displaystyle\int_1^{\infty} \frac{1}{x\sqrt{x^2-1}}\,dx$

4. $\displaystyle\int_0^{\infty} 2e^{-\theta}\sin\theta\,d\theta$

5. $\displaystyle\int_{-\infty}^{\infty} 2xe^{-x^2}\,dx$

6. $\displaystyle\int_0^1 x\ln x\,dx$

7. $\displaystyle\int_{-1}^4 \frac{1}{\sqrt{|x|}}\,dx$

Section 11.2:

1. Find the surface area when the curve

$$
\begin{aligned}
x &= \cos t, \\
y &= 2 + \sin t, \quad 0 \le t \le 2\pi
\end{aligned}
$$

is revolved about the x-axis.

2. Find the surface area when the curve

$$
\begin{aligned}
x &= \ln(\sec t + \tan t) - \sin t, \\
y &= \cos t, \quad 0 \le t \le \frac{\pi}{3}
\end{aligned}
$$

is revolved about the x-axis.