

Integration by Partial Fractions

1) $\int \frac{8x^2 + 22x + 49}{(x-2)(x+3)^2} dx$

$$2) \int \frac{13x^2 - 80x + 93}{(x-3)^2(2x-1)} dx$$

$$3) \int \frac{10x^2 - 11x + 79}{(x-1)(x^2+25)} dx$$

$$4) \int \frac{2x^2 + 7x - 20}{(x - 4)(x^2 + 4)} dx$$

Area between Curves

- 5) Find the area enclosed by $y = x - 1$ and $y^2 = 2x + 6$.

6) Find the area enclosed by $y = -x^2 - x + 3$, $y = -6x + 7$, and Y-axis.

Improper Integrals

7) $\int_1^{\infty} e^{-5x} dx$

8) $\int_{-\infty}^{\infty} x e^{-x^2} dx$

$$9) \int_1^e \frac{1}{x \sqrt{\ln(x)}} dx$$

$$10) \int_1^{27} \frac{1}{\sqrt[3]{x-8}} dx$$

Trapezoidal Rule

- 11) Use the Trapezoidal Rule with $n = 5$ to approximate the integral $\int_1^2 e^{-x^2} dx$. The value of the function for each point is given in the table below.

x	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
$f(x)$	1.00	0.99	0.96	0.91	0.85	0.78	0.70	0.61	0.53	0.44	0.37

- 12) Use the Trapezoidal Rule with $n = 6$ to approximate the integral $\int_1^{4.6} \ln(x^e) dx$. The value of the function for each point is given in the table below.

x	1.0	1.3	1.6	1.9	2.2	2.5	2.8
$f(x)$	0.00	0.71	1.30	1.74	2.14	2.49	2.80

x	3.1	3.4	3.7	4.0	4.3	4.6	
$f(x)$	3.08	3.33	3.56	3.77	3.96	4.15	

- 13) Use the Trapezoidal Rule with $n = 5$ to approximate the integral $\int_{0.5}^{1.5} 2^{e^x \sin(\frac{x\pi}{180})} dx$. The value of the function for each point is given in the table below.

x	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
$f(x)$	1.000	1.001	1.002	1.004	1.007	1.010	1.013	1.017	1.022	1.027	1.033

x	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	
$f(x)$	1.041	1.049	1.059	1.071	1.085	1.101	1.119	1.141	1.166	1.196	
