Math 122 – Gateway Exam Sample Problems

1.
$$\int_0^x e^t dt$$

2.
$$\int_0^\pi (\sin x - 3)dx$$

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

4.
$$\int_{-2}^2 (t^2 + 1)dt$$

5.
$$\int_0^1 (x + \sin \pi x)dx$$

6.
$$\int_{-1}^2 5dx$$

7.
$$\int_0^1 (2x^3 + 5x)dx$$

8.
$$\int_0^1 (x^{\frac{1}{3}} + 2x^{\frac{2}{3}})dx$$

9.
$$\int_0^1 \sin 2t dt$$

10.
$$\int_0^2 3x^{2/5} dx$$

11.
$$\int (x^{1/7} - x^{-1/7})dx$$

12.
$$\int e^{-3x} dx$$

13.
$$\int 3e^{-x/2} dx$$

14.
$$\int (4x^{-7} + 7x^6)dx$$

15.
$$\int \frac{x^2 + 3x}{\sqrt{x}} dx$$

16.
$$\int_{-1}^2 (x + 1)^2(x - 1)^2 dx$$

17.
$$\int_1^5 (x^2 - 1)^2 dx$$

18.
$$\int_{-3}^0 x(x - 1)dx$$

19.
$$\int_0^1 t^{1/2}(t + 2)dt$$

20.
$$\int_1^4 \frac{e^{-x}}{e^x} dx$$

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

22.
$$\int \frac{x^2}{x^3 - 12} dx$$

23.
$$\int x\sqrt{4+x^2}dx$$

24.
$$\int \frac{r}{1+3r^2}dr$$

25.
$$\int \frac{1}{x\ln x}dx$$

26.
$$\int \frac{x-1}{x^2-2x}dx$$

27.
$$\int x^2 \cos x^3 dx$$

28.
$$\int e^x \sin e^x dx$$

29.
$$\int \frac{\sin u}{\cos^2 u}du$$

30.
$$\int \frac{\sin(3+\ln x)}{x}dx$$

31.
$$\int_0^3 ye^{y^2}dy$$

32.
$$\int_0^1 \frac{2}{x+2}dx$$

33.
$$\int_0^1 (x-1)^{10}dx$$

34.
$$\int_0^{\sqrt{\pi}} x\cos x^2 dx$$

35.
$$\int_0^{\ln 2} \frac{e^x}{1+e^x}$$

36.
$$\int_{-1}^1 x^3\sqrt{1-x^4}dx$$

37.
$$\int_0^1 \frac{\sin x}{\cos x}dx$$

38.
$$\int_0^1 \sin \pi x \cos \pi x dx$$

39.
$$\int_0^{\sqrt{\pi/2}} t\sin(\pi - t^2)dt$$

40.
$$\int_0^2 x(a+x^2)^3 dx$$

41.
$$\int \frac{x}{e^x}dx$$

42.
$$\int \sqrt{y}\ln y dy$$

43.
$$\int x\sin x dx$$

44.
$$\int t\cos 2t dt$$

45.
$$\int 2te^{-t}dt$$

46.
$$\int x^3 \ln 2x dx$$

47.
$$\int \frac{t}{e^{2t}}dt$$

48.
$$\int \frac{1}{x^3}\ln x dx$$

49.
$$\int 3x\cos 2x dx$$

50.
$$\int ue^{-u/2}du$$

51.
$$\int_0^{2\pi} x\cos x\,dx$$

52.
$$\int_1^e \ln v\,dv$$

53.
$$\int_0^1 xe^{-x}\,dx$$

54.
$$\int_0^{\ln 3} xe^{2x}\,dx$$

55.
$$\int_1^e x^6 \ln x\,dx$$

56.
$$\int_1^2 \frac{\ln x}{x^2}\,dx$$

57.
$$\int_1^4 \sqrt{t}\ln t\,dt$$

58.
$$\int_0^y te^t\,dt$$

59.
$$\int_0^1 re^{r/2}\,dr$$

60.
$$\int_0^1 \ln(2x+1)\,dx$$

61.
$$\int_1^3 \frac{(\sqrt{x}+5)^6}{\sqrt{x}}\,dx$$

62.
$$\int_0^{\sqrt{\pi/2}} x\sin^2(x^2)\cos(x^2)\,dx$$

63.
$$\int_{\pi^2}^{4\pi^2} \frac{\sin\sqrt{x}\cos\sqrt{x}}{\sqrt{x}}\,dx$$

64.
$$\int_1^4 \frac{(4+\sqrt{r})^2}{\sqrt{r}}\,dr$$

65.
$$\int_0^1 \frac{\cos\pi x}{4+\sin\pi x}\,dx$$

66.
$$\int \frac{(1+e^{\sqrt{x}})e^{\sqrt{x}}}{\sqrt{x}}\,dx$$

67.
$$\int \frac{\cos u}{\sin^2 u - \sin u + .25}\,du$$

68.
$$\int e^x(e^x+2)^{10}\,dx$$

69.
$$\int \sin t(\cos t + 5)^7\,dt$$

70.
$$\int \frac{e^{\sqrt{t+1}}}{\sqrt{t+1}}\,dt$$

71.
$$\int_2^\infty \frac{1}{x^2}\,dx$$

72.
$$\int_1^\infty \frac{1}{\sqrt{x}}\,dx$$

73.
$$\int_0^\infty e^{-\pi x}\,dx$$

74.
$$\int_{-\infty}^\infty xe^{-x^2}\,dx$$

75.
$$\int_{-\infty}^{-2} \frac{1}{x^2}\,dx$$

76.
$$\int_1^3 \frac{1}{x^2-2x+1}\,dx$$

77.
$$\int_0^1 \frac{1}{\sqrt{t}}\,dt$$

78.
$$\int_0^1 t^{-3/2}dt$$

79.
$$\int_0^1 \frac{x}{\sqrt{1-x^2}}dx$$

80.
$$\int_0^\infty \frac{1}{1+u^2}du$$

81.
$$\int_{-1}^1 |x|dx$$

82.
$$\int_0^3 |x-2|dx$$

83.
$$\int_0^4 |x^2-1|dx$$

84.
$$\int_2^4 |x-2|dx$$

85.
$$\int_{-1}^1 \sqrt{|x|}dx$$

86.
$$\int_{-1}^1 \frac{1}{1+x^2}dx$$

87.
$$\int_0^1 \frac{1}{\sqrt{1-x^2}}dx$$

88.
$$\int 2^x 3^x dx$$

89.
$$\int y2^{y^2}dy$$

90.
$$\int_1^2 \frac{1}{4+u^2}du$$

91.
$$\int x^3 \sin x^2 dx$$

92.
$$\int w^3 e^{-w^2}dw$$

93.
$$\int_0^1 \frac{x}{1+x^4}dx$$

94.
$$\int x^2 \sin x dx$$

95.
$$\int \frac{1}{x^2+2x+5}dx$$

96.
$$\int_0^1 \frac{3x+1}{x^2-x-6}dx$$

97.
$$\int \frac{1}{x^3+x}dx$$

98.
$$\int_2^3 \frac{1}{x^2-1}dx$$

99.
$$\int_0^1 \frac{x-1}{x^2+3x+2}dx$$

100.
$$\int \frac{x-9}{(x+5)(x-2)}dx$$