

Table 2 illustrates the divergence of the integral in Example 10. Notice that the values do not approach any fixed number.

TABLE 2

t	$\int_1^t [(1 + e^{-x})/x] dx$
2	0.8636306042
5	1.8276735512
10	2.5219648704
100	4.8245541204
1000	7.1271392134
10000	9.4297243064

7.8 Exercises

1. Explain why each of the following integrals is improper.

(a) $\int_1^{\infty} x^4 e^{-x^4} dx$

(b) $\int_0^{\pi/2} \sec x dx$

17. $\int_0^{\infty} \cos x dx$

18. $\int_{-\infty}^{\pi/2} \sin 2\theta d\theta$

19. $\int_1^1 x e^{2x} dx$

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