1-10 Determine whether each improper integral is convergent or divergent. Evaluate those that are convergent.

1. $\displaystyle \int_{1}^{\infty} \frac{e^{-\sqrt{x}}}{\sqrt{x}}\, dx$

2. $\displaystyle \int_{1}^{\infty} \frac{x+1}{x^2 + 2x}\, dx$

3. $\displaystyle \int_{0}^{\infty} \frac{dz}{z^2 + 3z + 2}$

4. $\displaystyle \int_{0}^{\infty} se^{-5s}\, ds$

5. $\displaystyle \int_{0}^{\infty} \frac{x \arctan x}{(1 + x^2)^2}\, dx$

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

7. $\displaystyle \int_{-2}^{14} \frac{dx}{\sqrt[4]{x + 2}}$

8. $\displaystyle \int_{0}^{33} (x - 1)^{-1/5}\, dx$

9. $\displaystyle \int_{0}^{1} \frac{e^{1/x}}{x^3}\, dx$

10. $\displaystyle \int_{0}^{2} z^2 \ln z\, dz$