Determine whether the following improper integrals converge or diverge. Evaluate those that converge.

1. $\displaystyle\int_0^\infty \frac{dx}{x^2+1}$
2. $\displaystyle\int_1^\infty \frac{dx}{\sqrt{x}}$
3. $\displaystyle\int_{-1}^1 \frac{dx}{x^{2/3}}$
4. $\displaystyle\int_0^4 \frac{dx}{\sqrt{4-x}}$
5. $\displaystyle\int_1^\infty \frac{dx}{x^3+1}$
6. $\displaystyle\int_0^\infty \frac{dx}{x^3+1}$
7. $\displaystyle\int_0^\infty e^{-x}\cos x\,dx$
8. $\displaystyle\int_0^1 \frac{dx}{\sqrt{x}}$
9. $\displaystyle\int_0^{\pi/2} \tan x\,dx$
10. $\displaystyle\int_1^\infty \frac{dx}{x^{1.001}}$
11. $\displaystyle\int_0^1 \frac{dx}{x^{0.999}}$
12. $\displaystyle\int_0^1 \frac{dx}{\sqrt{1-x^2}}$
13. $\displaystyle\int_1^\infty x^{-3}\,dx$
14. $\displaystyle\int_0^\infty x^{-3}\,dx$
15. $\displaystyle\int_{-1}^1 \frac{dx}{x^2}$