Determine whether the improper integral is convergent or divergent. If convergent, try to find its value. It is not enough to simply give the answer. You should also show how you arrived at your answer.

(1) \( \int_1^\infty \frac{1}{x^{1.0001}} \, dx \)

(2) \( \int_1^\infty \frac{1}{\sqrt{x}} \, dx \)

(3) \( \int_0^\infty \frac{1}{x + 10^{10}} \, dx \)

(4) \( \int_0^\infty \frac{x^3}{x^4 + 1} \, dx \)
(5) \[ \int_0^\infty \frac{x^2}{x^4 + 1} \, dx \]

(6) \[ \int_1^\infty \frac{|\cos x|}{x^2} \, dx \]

(7) \[ \int_0^\infty \frac{1}{\sqrt{x^3 + 1}} \, dx \]

(8) \[ \int_0^\infty \frac{x}{\sqrt{x^3 + x^2 + 1}} \, dx \]