1 次の不定積分を計算せよ.

$$(1) \quad \int \frac{1}{x^3 - x} \, dx$$

(2) 
$$\int \frac{x^3 + 1}{x(x-1)^3} \, dx$$

(3) 
$$\int \frac{1}{x^2(x^2-1)^2} \, dx$$