

1. Find the indefinite integrals.

$$(1) \int x^7 + 4x^3 - 5x + 147 dx$$

$$(2) \int x^5 + \pi + \frac{4}{x^5} dx$$

$$(3) \int 5x^{\frac{2}{3}} dx$$

$$(4) \int \frac{7}{x^3} dx$$

$$(5) \int \cos t + 6 dt$$

$$(6) \int 3e^{-5t} dt$$

$$(7) \int \frac{x^3 + 2x - 7}{x} dx$$

$$(8) \int 7e^t + 2^t dt$$

$$(9) \int \frac{e^t}{e^t + 1} dt$$

2. Find the definite integrals.

(1) $\int_0^2 x^2 + x + 1 dx$

(2) $\int_{-1}^2 3x^2 - 2x + 1 dx$

(3) $\int_1^5 \frac{1}{x^2} dx$

(4) $\int_{-1}^5 \frac{1}{x^2} dx$

(5) $\int_1^8 5x^{\frac{2}{3}} dx$

(6) $\int_0^{32} x^{\frac{2}{5}} dx$

3. Show that $\ln 5 < 1 + \frac{1}{2} + \frac{1}{3} + \frac{1}{4}$.