

$$1. \int \frac{\sin\left(\frac{5}{x}\right)}{x^2} dx$$

$$2. \int \frac{x^3 dx}{x^4 + 1}$$

$$3. \int \frac{dx}{25x^2 + 1}$$

$$4. \int x e^{x^2} dx$$

$$5. \int_0^{\pi} x \sin(2x) dx$$

$$6. \frac{dy}{dx} = \frac{x^3}{y(1+x^4)} \quad y(0) = -1$$