

## 復習と広義積分

組 番 氏名 \_\_\_\_\_

1. 次の極限を求めよ.

$$(1) \lim_{x \rightarrow \infty} \frac{1}{x^2 + 1}$$

答 \_\_\_\_\_

$$(2) \lim_{x \rightarrow 0} \frac{x}{\sqrt{x+4} - 2}$$

答 \_\_\_\_\_

$$(3) \lim_{x \rightarrow \infty} \frac{2x+1}{x^2+2x+1}$$

答 \_\_\_\_\_

$$(4) \lim_{x \rightarrow \infty} \frac{3x^2 - 5x + 7}{5x^2 - 3x + 2}$$

答 \_\_\_\_\_

2. 次の関数を微分せよ.

$$(1) y = x\sqrt{x^2 + 1}$$

答 \_\_\_\_\_

$$(2) y = \frac{x^2 - 2x + 2}{x^2 + x + 1}$$

答 \_\_\_\_\_

$$(3) y = \log(1 + e^x)$$

答 \_\_\_\_\_

3. 次の広義積分を求めよ.

$$(1) \int_1^2 \frac{1}{\sqrt[5]{x-1}} dx$$

$$(2) \int_0^{\infty} \frac{dx}{(x+1)^3}$$

答 \_\_\_\_\_

答 \_\_\_\_\_