

复合函数运算

一、解答题

1. 求下列函数的导数:

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

$$(2) y = (2x-3)\sin(2x+5);$$

$$(3) y = \frac{\cos(3x-2)}{2x};$$

$$(4) y = (3x+1)^2 \ln(3x);$$

$$(5) y = 3^x e^{-3x}.$$

2. 求下列函数的导数:

$$(1) y = \sin 2x - \cos 2x;$$

$$(2) y = 2x \sin(2x+5);$$

$$(3) y = \ln(x + \sqrt{1+x^2});$$

$$(4) y = x^3 e^{\cos x}.$$

3. 求下列函数的导数:

(1) $y = \cos(x+3)$;

(2) $y = (2x-1)^3$;

(3) $y = e^{-2x+1}$.

4. 求下列函数的导数:

(1) $y = \cos(1+x^2)$;

(2) $y = \ln(2x^2+x)$.

5. 求下列函数的导数.

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

$$(2) y = e^{\sin(ax+b)};$$

$$(3) y = \sin^2\left(2x + \frac{\pi}{3}\right);$$

$$(4) y = 5\log_2(2x+1).$$

6. 求下列函数的导数:

$$(1) y = (x^2 + 2x - 1)e^{2-x};$$

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

$$(3) y = \frac{2x}{\sin(2x+5)};$$

$$(4) y = \log_3(2x-1).$$

7. 求下列函数的导数:

$$(1) y = \ln(e^x + x^2);$$

$$(2) y = 10^{2x+3};$$

$$(3) y = \sin^4 x + \cos^4 x;$$

$$(4) y = \frac{1}{\sqrt{1-x^2}};$$

$$(5) y = \sin 2x \cos 3x;$$

$$(6) y = x^3 e^{\cos x}.$$