演習　微分の応用_第 12 回

学年[2]年　学科[MI・AC・BC]　番号[　　]　氏名　[　　]

次の関数を微分せよ。

(01) $y = x^5$

(02) $y = 3x^2 - 5x + 4$

(03) $y = \dfrac{2}{x}$

(04) $y = \dfrac{1}{3x^6}$

(05) $y = \sqrt[3]{x^4}$

(06) $y = \dfrac{1}{\sqrt[6]{x}}$

(07) $y = \dfrac{1}{3}x^3 - \dfrac{1}{x} + 5\sqrt[5]{x}$

(08) $y = (x^2 - 3x + 5)^3$

(09) $y = \dfrac{1}{(4x-7)^6}$

(10) $y = \sqrt[3]{3x+5}$

(11) $y = \dfrac{2}{x+1}$

(12) $y = \dfrac{4x+3}{x-2}$

(13) $y = x^3(x-1)^4$

(14) $y = \log(3x+5)$

(15) $y = \log(x^2 + x - 1)$

(16) $y = \log|4x-3|$

(17) $y = \log_3|7x+4|$

(18) $y = x^2\log(2x+1)$

(19) $y = (2x+1)^2\log x$

(20) $y = \dfrac{\log(3x-2)}{x^2}$

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

(22) $y = 3^{2x+1}$

(23) $y = e^{x^2-3x-2}$

(24) $y = (x-1)e^{3x}$

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

(26) $y = \dfrac{\log x}{e^x}$

(27) $y = x\sin x$

(28) $y = \dfrac{\sin x}{1+\cos x}$

(29) $y = \tan(2x+1)$

(30) $y = e^{\sin x}$

(31) $y = \log|\cos x|$

(32) $y = (1+\tan x)^3$

(33) $y = \mathrm{Sin}^{-1}3x$

(34) $y = \mathrm{Cos}^{-1}\dfrac{x}{3}$

(35) $y = \mathrm{Tan}^{-1}\dfrac{x}{3}$

(36) $y = (2x+3)^4$

(37) $y = (x^2 - x + 1)^3$

(38) $y = \dfrac{1}{\cos x}$

(39) $y = \log(x^2 - x + 1)$

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

(41) $y = \cos(2x+3)$

(42) $y = \tan(2x+3)$

(43) $y = e^{2x}\cos 3x$

(44) $y = \dfrac{e^{2x}}{\sin 3x}$

(45) $y = \{\log(2x+3)\}^6$

(46) $y = \cos^5 2x$

[Hint] 次の公式を使用する

$$\left(\sqrt{x}\right)' = \frac{1}{2\sqrt{x}}$$

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

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

[Hint] 対数微分法を使用する

(49) $y = x^x$ （$x > 0$）

(50) $y = \dfrac{(2x+1)^3}{(4x-1)^2}$