学年[2]年　学科[MI・AC・BC]　番号[　　　]　氏名　[　　　　　　　　　　　　]

8　次の関数を微分せよ。

(1)　$y = (3x - 4)^5$

(2)　$y = \log(3x - 4)$

(3)　$y = e^{3x-4}$

(4)　$y = \sin(3x - 4)$

(5)　$y = \cos(3x - 4)$

(6)　$y = \mathrm{Sin}^{-1}\dfrac{x}{4}$

(7)　$y = \mathrm{Tan}^{-1}\dfrac{x}{4}$

(8)　$y = x \log x$

(9)　$y = \dfrac{e^{2x}}{x}$

(10)　$y = x \sin 2x$

(11)　$y = \dfrac{\sin 3x}{\cos 2x}$

(12)　$y = e^{2x} \cos 3x$

(13)　$y = \log(e^x + e^{-x})$

(14)　$y = e^{\sin 2x}$

(15)　$y = (\sin 2x + \cos 3x)^2$

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8　次の関数を微分せよ。

(1)　$y = (3x-4)^5$

$y' = 5(3x-4)^4 \times 3 = 15(3x-4)^4$

(2)　$y = \log(3x-4)$

$y' = \dfrac{3}{3x-4}$

(3)　$y = e^{3x-4}$

$y' = 3e^{3x-4}$

(4)　$y = \sin(3x-4)$

$y' = 3\cos(3x-4)$

(5)　$y = \cos(3x-4)$

$y' = -3\sin(3x-4)$

(6)　$y = \mathrm{Sin}^{-1}\dfrac{x}{4}$

$y' = \dfrac{\frac{1}{4}}{\sqrt{1-\left(\frac{x}{4}\right)^2}} = \dfrac{1}{\sqrt{16-x^2}}$

(7)　$y = \mathrm{Tan}^{-1}\dfrac{x}{4}$

$y' = \dfrac{\frac{1}{4}}{\left(\frac{x}{4}\right)^2+1} = \dfrac{4}{x^2+16}$

(8)　$y = x\log x$

$y' = 1 \times \log x + x \times \dfrac{1}{x}$

$= 1 + \log x$

(9)　$y = \dfrac{e^{2x}}{x}$

$y' = \dfrac{2e^{2x} \times x - e^{2x} \times 1}{x^2}$

$= \dfrac{(2x-1)e^{2x}}{x^2}$

(10)　$y = x\sin 2x$

$y' = 1 \times \sin 2x + x \times 2\cos 2x$

$= \sin 2x + 2x\cos 2x$

(11)　$y = \dfrac{\sin 3x}{\cos 2x}$

$y' = \dfrac{3\cos 3x \times \cos 2x - \sin 3x \times (-2\sin 2x)}{\cos^2 2x}$

$= \dfrac{3\cos 3x \cos 2x + 2\sin 3x \sin 2x}{\cos^2 2x}$

(12)　$y = e^{2x}\cos 3x$

$y' = 2e^{2x} \times \cos 3x + e^{2x} \times (-3\sin 3x)$

$= e^{2x}(2\cos 3x - 3\sin 3x)$

(13)　$y = \log(e^x + e^{-x})$

$y' = \dfrac{e^x - e^{-x}}{e^x + e^{-x}}$

(14)　$y = e^{\sin 2x}$

$y' = 2\cos 2x \times e^{\sin 2x} = 2e^{\sin 2x}\cos 2x$

(15)　$y = (\sin 2x + \cos 3x)^2$

$y' = 2(\sin 2x + \cos 3x)(2\cos 2x - 3\sin 3x)$