Q01 次の関数の導関数はどうなるか.//
アプリ「導関数の意味」を用いよ
[1]$y = x^2 - 3x$
[2]$y = \sin x$
Sheet [1]$y' = \ :: 2$ [2]$y' = \ :: 2$
Ans
[1] $y' = 2x - 3$
[2] $y' = \cos x$

Q02 次の関数を微分せよ.

[1] $y = x^4 + x^3 - x^2$

[2] $y = 3x^5$

[3] $y = (x+1)\sqrt{x}$

[4] $y = \dfrac{x^2 + 1}{x + 2}$

[5] $y = (2x + 3)^5$

Sheet [1]$y' =$ :: 2 [2]$y' =$ :: 2 [3]$y' =$ :: 2 [4]$y' =$ :: 2 [5]$y' =$ :: 2

Ans

[1] $y' = 4x^3 + 3x^2 - 2x$

[2] $y' = 15x^4$

[3] $y' = \sqrt{x} + \dfrac{x + 1}{2\sqrt{x}}$

[4] $y' = \dfrac{x^2 + 4x - 1}{(x + 2)^2}$

[5] $y' = 10(2x + 3)^4$

Q03 次の関数を微分せよ.

$[1]y = x + \cos x$

$[2]y = x \sin x$

$[3]y = \sin 4x$

Sheet $[1]y' = \ :: 2 \ [2]y' = \ :: 2 \ [3]y' = \ :: 2$

Ans

$[1]\ y' = 1 - \sin x$

$[2]\ y' = \sin x + x \cos x$

$[3]\ y' = 4 \cos 4x$

Q04 次の問いに答えよ

[] e の値を小数第 5 位まで書け.

Sheet [] $e = \ ::2$

Ans

[] 2.71828

Q04 微分せよ.

[1] $y = e^x + x^2$

[2] $y = e^{2x}$

[3] $y = e^{-x}$

Sheet [1] $y' = \ ::2$ [2] $y' = \ ::2$ [3] $y' = \ ::2$

Ans

[1] $y' = e^x + 2x$

[2] $y' = 2e^x$

[3] $y' = -e^{-x}$

Q05 微分せよ.

[1] $y = \log x + e^x$

[2] $y = \log 2x$

[3] $y = \log(x + 2)$

Sheet [1] $y' = \; :: 2$ [2] $y' = \; :: 2$ [3] $y' = \; :: 2$

Ans

[1] $y' = \dfrac{1}{x} + e^x$

[2] $y' = \dfrac{1}{x}$

[3] $y' = \dfrac{1}{x + 2}$

Q06 問いに答えよ.
[] $\int x^2 dx$ はどうなるか.
Sheet [] $\int x^2 dx = \;\; :: 2$
Ans
[] $y' = \dfrac{1}{3}x^3 + C$

Q07 次の不定積分を求めよ.

[1] $\displaystyle\int (x^3 - 5x^2 + 1)dx$

[2] $\displaystyle\int (1 - x - x^2)dx$

[3] $\displaystyle\int 3x^2 dx$

[4] $\displaystyle\int (-3x^2 + 2x + 3)dx$

[5] $\displaystyle\int (4x^3 - 8x + 3)dx$

[6] $\displaystyle\int (2x^3 + 4x - 3)dx$

Sheet [1] = :: 2 [2] = :: 2 [3] = :: 2 [4] = :: 2 [5] = :: 2 [6] = :: 2

Ans

[1] $= \dfrac{1}{4}x^4 - \dfrac{5}{3}x^3 + x + C$

[2] $= x - \dfrac{1}{2}x^2 - \dfrac{1}{3}x^3 + C$

[3] $= x^3 + C$

[4] $= -x^3 + x^2 + 3x + C$

[5] $= x^4 - 4x^2 + 3x + C$

[6] $= \dfrac{1}{2}x^4 + 2x^2 - 3x + C$

Q08 次の不定積分を求めよ.

[1] $\displaystyle\int (3\sin x + \cos 3x)dx$

[2] $\displaystyle\int (1 + \frac{1}{\cos x})(1 - \frac{1}{\cos x})dx$

Sheet [1] $=:: 2$ [2] $=:: 2$

Ans

[1] $= -3\cos x + \dfrac{1}{3}\sin 3x + C$

[2] $= x - \tan x + C$

Q09 次の不定積分を求めよ.

[1] $\displaystyle\int (2e^x + \frac{3}{x})dx$

[2] $\displaystyle\int (e^x + 1)^2 dx$

Sheet [1] $= :: 2$ [2] $= :: 2$

Ans

[1] $= 2e^x + 3\log x + C$

[2] $= \dfrac{1}{2}e^x + 2e^x + x + C$