

24-MAVZU

***DIFFERENSIYAL.
YUQORI TARTIBLI HOSILA
VA DIFFERENSIYALLAR***

(UV) ko'paytmaning yuqori tartibli hosilasini olish

$$(UV)' = U'V + UV'$$

$$(UV)'' = (U'V + UV')' = U''V + 2U'V' + UV''$$

$$(UV)''' = (U''V + 2U'V' + UV'')' = U'''V + 3U''V' + 3U'V'' + UV'''$$

$$(UV)^n = U^nV + \frac{n}{1!}U^{(n-1)}V' + \frac{n(n-1)}{2!}U^{(n-2)}V'' + \frac{n(n-1)(n-2)}{3!}U^{(n-3)}V''' + \dots + UV^n$$

LEYBNITS FORMULASI

MISOL

MISOL

$y = x^2 e^x$ funksiyaning 50-hosilasini toping.

$U = e^x$, $V = x^2$ desak, $V' = 2x$, $V'' = 2$, $V''' = 0$
ekanligidan,

$(x^2 e^x)^{(50)} = x^2 e^x + \frac{50}{1!} e^x 2x + \frac{50 \cdot 49}{1!} e^x 2$, chunki
qolgan qo'shiluvchilar nollardan iborat
bo'ladi.

DIFFERENSIAL

$$dy = y'(x) dx$$

DIFFERENSIAL HISOBLASH QOIDALARI

1. $d(C_1U \pm C_2V) = (C_1U \pm C_2V)'dx = (C_1U' \pm C_2V')dx =$
 $= C_1dU \pm C_2dV$

2. $d(UV) = (UV)'dx = (U'V + UV')dx = VdU + UdV$

3. $d\left(\frac{U}{V}\right) = \left(\frac{U}{V}\right)'dx = \frac{VU' - UV'}{V^2}dx = \frac{VdU - UdV}{V^2}$.