$f(x,y)$ funksiya qachon $k$ tartibli bir jinsli funksiya deyiladi?

======

#$f(\lambda x, \lambda y) = \lambda^k f(x,y)$

======

$f(\lambda x, \lambda y) = \lambda f(x,y)$

======

$f(\lambda x, \lambda y) = k^\lambda f(x,y)$

======

$f(\lambda x, \lambda y) = (\lambda k) f(x,y)$

y'-y/x=x+1 tenglamaning turini aniqlang

======

o'zgaruvchilari ajraladigan

======

#chiziqli

======

bir jinsli

======

Bernulli

Erkli o‘zgaruvchi, noma’lum funksiya va uning hosilalari yoki differensiallarini bog‘lovchi tenglamaga  … deyiladi.

======

#differensial tenglama

======

umumiy yechim

======

xususiy yechim

======

Tartibi

---

Differensial tenglamani xususiy yechimini toping

$$3y' + y = 0 \qquad y(0) = 2$$

======

# $y = 2e^{-\frac{x}{3}}$

======

$y = 2 + x^3$

======

$y = 2e^{-3x}$

======

$y = 2e^{\frac{x}{3}}$

Differensial tenglamani xususiy yechimini toping.

$$y' = 4\sqrt{y} \quad y(0) = 9$$

======

# $y = (2x+3)^2$

======

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

======

$$y = 2x + 9$$

======

$$y = \frac{1}{9}(2x+9)^2$$

Differensial tenglamani xususiy yechimini toping.

$$e^y y' + 1 = 0, \quad y(0) = \ln 2$$

======

# $y = \ln(2-x)$

======

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

======

$$y = \frac{1}{2}\ln(4 - x)$$

(x-2y+3)dy+(2x+y-1)dx=0 tenglamaning turini aniqlang

======

#bir jinsliga keladigan

======

bir jinsli

======

chiziqli

======

Bernulli

$y'' + 16y = 0$ tenglamaning umumiy yechimini toping

======

# $y = c_1 \cos 4x + c_2 \sin 4x$

======

$y = ce^{-16x}$

======

$y = c_1 e^{4x} + c_2 e^{-4x}$

======

$y = c_1 e^{-4x} \cos 4x + c_2 e^{-4x} \sin 4x$

2(x+y)dy+(3x+3y-1)dx=0 tenglamaning turini aniqlang

======

#bir jinsliga keladigan

======

bir jinsli

======

chiziqli

======

Bernulli

Chiziqli tenglamani yechish uchun qanday almashtirish bajariladi

======

#y=uv

======

y=ux

======

y=x+u

======

y=x+v

$\left(2x+3x^2\right)dx+2ydy=0$ tenglamaning umumiy yechimini toping

======

# $x^2+x^3+y^2=c$

======

$x^2y+y^3=c$

======

$x^2y+x^3=c$

======

$$\frac{x}{y} + x^3 = c$$

Ushbu $y = cx^2$ chiziqlar sinfining differensial tenglamasini toping

======

# $xy' = 2y$

======

$$y' = y^{\frac{2}{x}}$$

======

$$y'x = 3y$$

======

$$y'x^2 = y^2$$

y = z(x, $C_0$) ko‘rinishdagi funksiya differensial tenglamaning ... yechimi deyiladi

======

#xususiy

======

umumiy

======

xos

======

xosmas

$$F\left(x, y, y', y'', \ldots, y^{(n)}\right) = 0$$

tenglama $x, y, y', y'', \ldots, y^{(n)}$ larga nisbatan bir jinsli bo‘lsa, qanday almashtirish bajariladi.

======

# $\frac{y'}{y} = p(x)$

======

**y=p(x)**

======

$y_1 = \frac{\sin x}{x}$

======

$y=x$

$y''' + 3y' = x$, $y(0)=1, y'(0)=3$ $y''(0)=2$ Ushbu , masala, qanday masala deyiladi.

======

#Koshi masalasi

======

Chegaraviy masala

======

Variasion masala

======

Gursa masalasi

$y'' - 16y = 0$ tenglamaning umumiy yechimini toping.

======

# $y = c_1 e^{4x} + c_2 e^{-4x}$

======

$y = c_1 \cos 4x + c_2 \sin 4x$

======

$y = ce^{-16x}$

======

$y = c_1 e^{-4x} \cos 4x + c_2 e^{-4x} \sin 4x$

........... tenglamasi o‘zgaruvchi koeffisientli chiziqli tenglamadir.

======

#Eyler

======

Klero

======

Jordan

======

Kopernik

$2y - xy' = 0$ tenglamaning umumiy yechimini toping.

======

# $y = cx^2$

======

$y^3 = cx + x^2$

======

$xy + y^3 = c$

======

$y = 0$

$y' = \frac{y}{x}$ tenglamani yechimini aniqlang

======

\# $y = cx$

======

$y = c + x$

======

$y = c_1 e^{2x} + c_2 e^{-2x}$

======

$y = ce^{-4x}$

$y' = \frac{y}{x}$ tenglamani yechimini aniqlang

======

\# $y = cx$

======

$y = c + x$

======

$$y = c_1e^{2x} + c_2e^{-2x}$$

======

$$y = ce^{-4x}$$

y'=y/x(ln(y/x)+1) tenglamaning turini aniqlang

======

#bir jinsli

======

Klero

======

chiziqli

======

Bernulli

y'cosx=(y+1)sinx tenglamaning turini aniqlang

======

#o'zgaruvchilari ajraladigan

======

chiziqli

======

bir jinsli

======

Bernulli

Chiziqli tenglama … usuli yordamida yechiladi

======

#Bernulli

======

Nyuton

======

Kramer

======

Gauss

y'lny=y tenglamaning turini aniqlang

======

#o'zgaruvchilari ajraladigan

======

chiziqli

======

bir jinsli

======

Bernulli

$dy = \sin(2x + 3y)dx$ tenglama qanday almashtirish yordamida o‘zgaruvchilari ajralgan tenglamaga keladi?

======

# $z = 2x + 3y$

======

$y = zx^n$

======

$y = zx$

======

$y = 3e^{2x}$

$y' = \frac{y}{x \ln x}$ tenglamani yechimini aniqlang.

======

# $y = c \ln x$

======

$y = c + \ln x$

======

$y = c \ln x + x$

======

$y'' - 2y' = 0$ tenglamaning umumiy yechimini toping.

======

# $y = c_1 + c_2 e^{2x}$

======

$y = c_1 e^{2x} + c_2 e^{-2x}$

======

$y = c e^{-2x}$

======

$y = c_1 \cos 2x + c_2$

$y' = f\left(\frac{x - y + 1}{2x - 2y - 3}\right)$ tenglama qanday almashtirish yordamida o‘zgaruvchilari ajralgan tenglamaga keladi?

======

# $z = x - y$

======

$z = yx^2$

======

$z = yx$

======

$z = ye^{ax}$

$y'' - 5y' + 6y = 0$ tenglamaning umumiy yechimi topilsin

======

# $y = c_1e^{2x} + c_2e^{3x}$

======

$y = c_1e^{2x} + c_2e^{-3x}$

======

$y = c_1e^{-2x} + c_2e^{3x}$

======

$y = c_1e^{-2x} + c_2e^{-3x}$

Differensial tenglama deb,............... aytiladi?

======

#erkli o'zgaruvchi, noma'lum funksiya va uning hosilalari orasidagi bog'lanishli tenglamaga aytiladi

======

erkli o'zgaruvchi, noma'lum funksiya va uning boshlang'ich tenglamaga aytiladi

======

noma'lum funksiya va uning boshlang'ich tenglamaga aytiladi

======

boshlang'ich shartli

Differensial tenglamada ko‘p argumentli hol bo‘lsa,......... deyiladi

======

#Hususiy hosilali differensial tenglama

======

Ko'p hosilali differensial tenglama

======

Karrali hosilali differensial tenglama

======

Yopiq differensial tenglama

$y' = \frac{3x - y}{2x + y}$ tenglama qanday almashtirish yordamida o‘zgaruvchilari ajralgan tenglamaga keladi?

======

# $z = \frac{y}{x}$

======

$y = zx^n$

======

$y' = zy$

======

$y = \frac{z}{x}$

$y''' - 2y'' = 0$ tenglamaning umumiy yechimini toping

======

#$y = c_1 + c_2 x + c_3 e^{2x}$

======

$y = ce^{2x}$

======

$y = c_1 e^{2x} + c_2 e^{-2x}$

======

$y = ce^{-6x} \sin 6x$

Agar differensial tengama bir o‘zgaruvchili bo‘lsa, u holda u ... differensial tenglama deyiladi

======

#oddiy

======

xarakteristik

======

umumiy

======

xususiy hosilali

Agar differensial tengama ikki va undan ortiq o‘zgaruvchili bo‘lsa, u holda u ... differensial tenglama deyiladi

======

#xususiy hosilali

======

oddiy

======

umumiy

======

xarakteristik

To‘la differensial tenglama bo‘lish sharti …

======

# $\frac{\partial P}{\partial y} = \frac{\partial Q}{\partial x}$

======

$u = \int P(x,y)dx + C(y)$

======

$\frac{\partial u}{\partial y} = P$

======

y=tx

Differensial tenglama tarkibiga kiruvchi eng yuqori hosila tartibi differensial tenglamaning ... deyiladi

======

#tartibi

======

yechimi

======

sharti

======

funksiyasi

y'+sin(x+y)=sin(x-y) tenglamaning turini aniqlang

======

#o'zgaruvchilari ajraladigan

======

chiziqli

======

bir jinsli

======

Bernulli

xy'+y=0 tenglamaning turini aniqlang

======

#o'zgaruvchilari ajraladigan

======

chiziqli

======

bir jinsli

======

Bernulli

y'+y=0 tenglamaning turini aniqlang

======

#o'zgaruvchilari ajraladigan

======

chiziqli

======

bir jinsli

======

Bernulli

$(x-2y+3)dy+(2x+y-1)dx=0$ tenglamaning turini aniqlang

======

#bir jinsliga keladigan

======

bir jinsli

======

chiziqli

======

Bernulli

$y'=y^{2/3}$ tenglamaning turini aniqlang

======

#o'zgaruvchilari ajraladigan

======

chiziqli

======

bir jinsli

======

Bernulli

$y'=x(y^2+1)$ tenglamaning turini aniqlang

======

#o'zgaruvchilari ajraladigan

======

chiziqli

======

bir jinsli

======

Bernulli

$yy'/x+e^{y}=0$ tenglamaning turini aniqlang

======

#o'zgaruvchilari ajraladigan

======

chiziqli

======

bir jinsli

======

Bernulli

$y'=f(x, y)$ tenglama … tenglama deyiladi, agar $f(x, y)$ funrsiya nolinchi tartibli bir jinsli funksiya bo‘lsa

======

#bir jinsli

======

chiziqli

======

Bernulli

======

Klero

Differensial tenglamaning ... deb, tenglamani ayniyatga aylantiruvchi $y = z(x,C)$ funksiyaga aytiladi

======

#umumiy yechimi

======

xususiy yechimi

======

tartibi

======

xarakteristik tenglamasi

$f(tx, ty)=t^n f(x, y)$ shartni qanoatlantiruvchi $f(x, y)$ funksiyaga ... funksiya deyiladi

======

#bir jinsli

======

chiziqli

======

toq

======

juft

$y'=x(y^2+1)$ tenglamaning turini aniqlang

======

#o'zgaruvchilari ajraladigan

======

chiziqli

======

bir jinsli

======

Bernulli

y'=-y/x tenglamaning y(2)=1 dagi xususiy yechimini toping

======

#y=2/x

======

y=2

======

y=1/x

======

y=2x

y"=x tenglamaning umumiy yechimini toping

======

#$y=x^3/6+C_1x+C_2$

======

y=x+C

======

y=2x+C

======

y=C

y"=$e^x$ tenglamaning umumiy yechimini toping

======

#$y=e^x+C_1x+C_2$

======

$y=e^x+C$

======

y=lnx+C

======

y=C

tgxdx-ctgydy=0 tenglamaning umumiy yechimini toping

======

#sinycosx=C

======

y=tgx+C

======

y=ctgy+C

======

siny+cosx=C

$(1+x^2)dy+ydx=0$ tenglamaning umumiy yechimini toping

======

#lny+arctgx=C

======

lnx+tgy=C

======

arctgx=C

======

x+y=C

ДУ y''-7y'+6y=0 tenglamaning umumiy yechimini toping

======

#$y=C_1e^x+C_2e^{6x}$

======

$y=C_1e^{-7x}+C_2e^{6x}$

======

$y=Ce^{6x}$

======

$y=Ce^x$

ДУ y''-y'-2y=0 tenglamaning umumiy yechimini toping

======

#$y=C_1e^{2x}+C_2e^{-x}$

======

$y=C_1e^{-2x}+C_2e^{-x}$

======

$y=Ce^{-x}$

======

$y=Ce^{2x}$

Agar xarakteristik tenglamaning yechimlari haqiqiy sonlardan iborat bo‘lsa, u holda umumiy yechim …

======

# $y = C_1e^{k_1x} + C_2e^{k_2x} + ...$

======

$y = (C_1 + C_2x + C_3x^2 + ... + C_nx^{n-1})e^{kx}$

======

$y = e^{\alpha x}(C_1 \cos \beta x + C_2 \sin \beta x)$

======

$y = C_1 + C_2x + C_3x^2 + ... + C_nx^{n-1}$

y''-4y'+5y=0 tenglamaning umumiy yechimini toping

======

#$y=e^{2x}(C_1\cos x+C_2\sin x)$

======

$y=e^{x}(C_1\cos x+C_2\sin x)$

======

$y=e^{x}(C_1\cos2x+C_2\sin2x)$

======

$y=e^{2x}(C_1\cos x-C_2\sin x)$

y'=-y/x tenglamaning umumiy yechimini toping

======

#y=C/x

======

y=Cx

======

y=C+x

======

y=C

Bir jinsli tenglamani yechish uchun … almashtirish bajariladi

======

#y = ux

======

y=uv

======

y=u+v

======

y=z'

Quyidagilarni qaysi biri bir jinsli differnsial tenglama?

======

$$y' = \frac{x^2y + y^3}{x^3 + x^2y}$$
#

======

$$y' = \frac{x^2 + y^2}{x^3}$$

======

$$y' + x^2y + x = 0$$

======

$$y' = \frac{y}{x^2 + y}$$

Bir jinsl differensial tenglamaga keltiriladigan differensial tenglamaning umumiy ko‘rinishini toping

======

$$y' = \frac{a_1x + b_1y + c_1}{a_2x + b_2y + c_2}$$
#

======

$$y' = \frac{a_1x + c_1}{a_2x + c_2}$$

======

$$y' = \frac{a_1x + b_1y_1}{a_2x + b_2y + c_2}$$

======

$$y' = \frac{b_1y + c_1}{b_2y + c_2}$$

$$y' = \frac{a_1x + b_1y + c_1}{a_2x + b_2y + c_2}$$ tenglama qachon bir jinsl differensial tenglamaga keladi?

======

# $\begin{vmatrix} a_1 & b_1 \\ a_2 & b_2 \end{vmatrix} \neq 0$

======

$$\begin{vmatrix} a_1 & b_1 \\ a_2 & b_2 \end{vmatrix} = 0$$

======

$$\begin{vmatrix} c_1 & b_1 \\ c_2 & b_2 \end{vmatrix} \neq 0$$

======

$$\begin{vmatrix} a_1 & c_1 \\ a_2 & c_2 \end{vmatrix} \neq 0$$

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

tenglamani bir jinsliga keltirish uchun qanday almashtirish bajariladi?

======

$$\begin{cases} x = x_1 - 1 \\ y = y_1 - 1 \end{cases}$$

#

======

$$\begin{cases} x = x_1 - 1 \\ y = y_1 + 1 \end{cases}$$

======

$$\begin{cases} x = x_1 + 1 \\ y = y_1 - 1 \end{cases}$$

Berilgan tenglamaning tipini aniqlang: $\left(x+x^2\right)y' + x^2 y = 0$

======

#o'zgaruvchilari ajraladigan

======

to’la differensial

======

y ga nisbatan chiziqli

======

Bernulli

Tenglamani yeching $y' = e^{-\frac{y}{x}} + \frac{y}{x}$

======

# $y = x\ln\left(\ln(Cx)\right)$

======

$y = \ln\ln\frac{C}{x}$

======

$y = -x\ln\left(\ln(Cx)\right)$

======

$y = x\ln\left(\ln C\right)$

Tenglamani yeching

$y' = \frac{x^2 + y^2}{xy}$

======

$y^2 = x^2\left(2\ln x + C\right)$

#

======

$$y = x^2\left(2\ln x + C\right)$$

======

$$y^2 = x^2\left(-2\ln x + C\right)$$

======

$$y = x\left(2\ln x + C\right)$$

Chiziqli differensial tenglamani qaysi usulda yechiladi?

======

#Bernulli

======

Gauss

======

Kramer

======

Nyuton

Chiziqli differensial tenglamani qaysi usulda yechiladi?

======

#Lagranj

======

Kramer

======

Gauss

======

Nyuton

Agar $y' + P(x)y = Q(x)$ tenglamaning o‘ng tomoni $Q(x) \equiv 0$ bo‘lsa, ……. tenglama bo‘ladi.

======

# chiziqli bir jinsli

======

Rikatti

======

to‘la differensial

======

Bernulli

$2xe^{-x^2} + \frac{y'}{y} = 0$ tenglamaning turini aniqlang

======

#o'zgaruvchilari ajraladigan

======

chiziqli

======

bir jinsli

======

Bernulli

$y'' - 2y' = 0$ tenglamani harakteristik tenglamasini tuzing.

======

# $k^2 - 2k = 0$

======

$$k^3 - 2k^2 + k = 0$$

======

$$k^2 - 2k - 3 = 0$$

======

$$k^2 - 2k + 2 = 0$$

Xarakteristik tenglamaning ildizi kompleks son bo‘lganda ham tenglama yechimi mavjudmi.

======

#mavjud

======

mavjud emas

======

faqat haqiqiyda mavjud

======

ratsional son bo'lganda mavjud

Koshi masalasi yana qanday shartli masala deyiladi

======

#Boshlang'ich shartli masala

======

Nol shartli masala

======

Klero shartli masala

======

Rittag shartli masala

Koshi masalasi yana qanday shartli masala deyiladi

======

#Boshlang'ich shartli masala

======

Nol shartli masala

======

Klero shartli masala

======

Rittag shartli masala

Yuqori tartibli tenglamada erkli o‘zgaruvchi oshkor holda qatnashmasa qanday yechish mumkin?

======

#Tartibi pasaytirilib

======

Tartibi oshirilib

======

O'zgarmasni yo'qotib

======

O'zgaruvchini ajratib

Boshlang‘ich shartli differensial tenglama yana qanday nomlanadi?

======

#Koshi masalasi

======

Gursa masalasi

======

Farq masalasi

======

o'zgaruvchini almashtirish masalasi

$M(x,y)dx + N(x,y)dy = 0$ tenglama o‘zgaruvchilarga nisbatan bir jinsli deyiladi, agar·… tenglik o‘rinli bo‘lsa

======

# $\frac{\partial M}{\partial y} \equiv \frac{\partial N}{\partial x}$

======

$\frac{\partial M}{\partial y} \neq \frac{\partial N}{\partial x}$

======

$\frac{\partial M}{\partial y} > \frac{\partial N}{\partial x}$

======

$\frac{\partial M}{\partial y} < \frac{\partial N}{\partial x}$

Lagranj tenglamasini aniqlang

======

# $y = x\varphi(y') + \psi(y')$

======

$m(x)dx + n(y)dy = 0$

======

$a(x)y' + b(x)y = c(x)y^{\alpha}$

======

$a(x)y' + b(x)y + c(x)y^{\alpha} = d(x)$

$dy = \sin(2x + 3y)dx$ tenglama qanday almashtirish yordamida o‘zgaruvchilari ajralgan tenglamaga keladi?

======

# $z = 2x + 3y$

======

$y = zx^{n}$

======

$y = zx$

======

$y = 3e^{2x}$

Ushbu $y' = 2xy$ tenglamaning umumiy yechimini toping.

======

# $y = ce^{x^2}$

======

$y = ce^{2x}$

======

$x = ce^{y^2}$

======

$y = cx + x^2$

Agar Vronskiy determinanti noldan farqli bo‘lsa, u holda funksiyalar …

======

#chiziqli bog'liq emas

======

chiziqli bog'liq

======

chiziqli

======

chiziqsiz

$y' - 2xy = 0$ englamaning umumiy yechimini toping

======

# $y = c \cdot e^{x^2}$

======

$y = c + e^{x^2/2}$

======

$y = c \cdot e^{2x^2}$

======

$y = c \cdot x^2$

y'+ycosx=1/2sin2x tenglamaning turini aniqlang

======

o'zgaruvchilari ajraladigan

======

#chiziqli

======

bir jinsli

======

Bernulli

$y' = \frac{3x - y}{2x + y}$ tenglama qanday almashtirish yordamida o‘zgaruvchilari ajralgan tenglamaga keladi?

======

# $z = \frac{y}{x}$

======

$y = zx^n$

======

$y' = zy$

======

$y = \frac{z}{x}$

$y''' - 2y'' = 0$ tenglamaning umumiy yechimini toping

======

# $y = c_1 + c_2 x + c_3 e^{2x}$

======

$y = ce^{2x}$

======

$y = c_1 e^{2x} + c_2 e^{-2x}$

======

$y = ce^{-6x} \sin 6x$

$y''' = x$ tenglamani yeching

======

# $y = \frac{x^4}{24} + \frac{c_1}{2} x^2 + c_2 x + c_3$

======

$y = \frac{x^4}{24} + \frac{c_1}{2} x^2$

======

$y = \frac{c_1}{2} x^2 + c_2 x$

======

$y = \frac{x^4}{24}$

$y' = \frac{y}{x}$ tenglamani yechimini aniqlang

======

# $y = cx$

======

$y = c + x$

======

$y = c_1 x + c_2$

======

$y = ce^x$

$y'' + 4y = 0$ tenglamaning umumiy yechimini toping

======

# $y = c_1 \cos 2x + c_2 \sin 2x$

======

$y = c_1 e^{2x} + c_2 e^{-2x}$

======

$y = ce^{-4x}$

======

$y = ce^{-2x} + \frac{1}{3} e^x$

$y''' = x$ tenglamani yeching

======

# $y = \frac{x^4}{24} + \frac{c_1}{2} x^2 + c_2 x + c_3$

======

$y = \frac{x^4}{24} + \frac{c_1}{2} x^2$

======

$y = \frac{c_1}{2}x^2 + c_2 x$

======

$y = \frac{x^4}{24}$

$y'' - 5y' + 6y = 0$ tenglamaning umumiy yechimi topilsin

======

#$y = c_1 e^{2x} + c_2 e^{3x}$

======

$y = c_1 e^{2x} + c_2 e^{-3x}$

======

$y = c_1 e^{-2x} + c_2 e^{3x}$

======

$y = c_1 e^{-2x} + c_2 e^{-3x}$

$y^2 \frac{\partial z}{\partial x} + xy \frac{\partial z}{\partial y} = 0$ tenglamaning turini aniqlang

======

#xususiy hosilali

======

Bernulli

======

bir jinsli

======

chiziqli

$yy' = \frac{-2x}{\cos y}$ tenglamaning turini aniqlang

======

#o'zgaruvchilari ajraladigan

======

chiziqli

======

bir jinsli

======

Bernulli

$\frac{yy'}{x} + e^{y} = 0$ tenglamaning turini aniqlang

======

#o'zgaruvchilari ajraladigan

======

chiziqli

======

bir jinsli

======

Bernulli

yy'=-2x/cosy tenglamaning turini aniqlang

======

#o'zgaruvchilari ajraladigan

======

chiziqli

======

bir jinsli

======

Bernulli

$y' = \frac{y}{x}\left(\ln\frac{y}{x} + 1\right)$ tenglamaning turini aniqlang

======

#bir jinsli

======

chiziqli

======

Bernulli

======

Klero

xy'+y=xy$^2$lnx tenglamaning turini aniqlang

======

o'zgaruvchilari ajraladigan

======

chiziqli

======

bir jinsli

======

#Bernulli

Agar $\begin{vmatrix} a & b \\ a_1 & b_1 \end{vmatrix} \neq 0$ bo‘lsa, u holda … almashtirish bajariladi

======

# $x = u + \alpha; \qquad y = v + \beta;$

======

$ax + by = t.$

======

y = ux

======

y=uv

Agar $\begin{vmatrix} a & b \\ a_1 & b_1 \end{vmatrix} = 0$ bo‘lsa, u holda … almashtirish bajariladi

======

# $ax + by = t.$

======

y=tx

======

y = ux

======

y=uv

To‘la differensial tenglamaning umumiy yechimi …

======

#u=C

======

u=F(x,y)

======

u=xy

======

u=x/y

$y'' - y' - 2y = 0$ tenglamni yeching.

======

# $y = C_1 e^{-x} + C_2 e^{2x}$

======

$y = C_1 e^{-3x}$

======

$y = C_1 e^{k_1 x}$

======

$y_1 = \operatorname{sh} x$

Differensial tenglamalar sistemasiga mosini ko‘rsating.

======

# $\begin{cases} \dfrac{dx}{dt} = 2(x^2 + y^2)t, \\ \dfrac{dy}{dt} = 4xyt. \end{cases}$

======

$F\left(t, \ U, \ \dfrac{dU}{dt}\right) = 0$

======

$y(t) = \ln|C_1 t + C_2| + C_3,$
$z(t) = (C_1 + 1)t + C_2.$

======

$$\begin{cases} 3A + B = 0, \\ A + B = 10 \end{cases}$$

$dy = \ln(2x + y - 2)dx$ tenglama qanday almashtirish yordamida o‘zgaruvchilari ajralgan tenglamaga keladi?

======

#$z = 2x + y - 2$

======

$y = zx^n$

======

$y = zx$

======

$y = 3e^{2x}$

$y' = f\left(\dfrac{x - y + 1}{2x - 2y - 3}\right)$ tenglama qanday almashtirish yordamida o‘zgaruvchilari ajralgan tenglamaga keladi?

======

#$z = x - y$

======

$z = yx^2$

======

$z = yx$

======

$z = ye^{\alpha x}$

$y' - xy = 0$ tenglamaning umumiy yechimini toping.

======

# $y = c \cdot e^{x^2/2}$

======

$y = c + e^{x^2/2}$

======

$y = c \cdot e^{x^2}$

======

$y = c \cdot x^2$

Hususiy yechimi $y_1 = xe^x$ bo‘lgan chiziqli o‘zgarmas koeffisientli differensial tenglamani ko‘rsating

======

# $y'' - 2y' + y = 0$

======

$y'' - 2y' - 3y = 0$

======

$y' - y = 0$

======

$y'' + 2y'' + y = 0$ $y'' + 2y'' + y = 0$

Ushbu $3x^2y\,dx+\left(x^3-3y^2\right)dy=0$ tenglamaning umumiy yechimini toping:

======

# $x^3y-y^3=c$

======

$x^2y^2-y=c$

======

$xy-y^2=c$

======

$xy^2+y=c$

$y''+9y'=0$ tenglamaning umumiy yechimini toping:

======

# $y=c_1+c_2e^{-9x}$

======

$y=c_1e^{3x}+c_2e^{-3x}$

======

$y=c_1\cos 3x+c_2\sin 3x$

======

$y=c_1+c_2e^{9x}$

$y''-y'-2y=0$ tenglamaning umumiy yechimi topilsin

======

#$y = c_1e^{-x} + c_2e^{2x}$

======

$y = c_1e^{-x} + c_2e^{-2x}$

======

$y = c_1e^{x} + c_2e^{-2x}$

======

$y = c_1e^{x} + c_2e^{2x}$

xy'=yln(y/x) tenglamaning turini aniqlang

======

#o'zgaruvchilari ajraladigan

======

chiziqli

======

bir jinsli

======

Bernulli

Qanday almashtirish bajarilsa ushbu $y' - xy = 4\sqrt{y}$ tenglama chiziqli tenglamaga keladi?

======

#$z = \sqrt{y}$

======

$y = zx$

======

$z = \frac{1}{\sqrt{y}}$

======

$y = zx^2$

Ushbu $y = cx^2$ chiziqlar sinfining differensial tenglamasini toping

======

# $xy' = 2y$

======

$y' = y^{\frac{2}{x}}$

======

$y'x = 3y$

======

$y'x^2 = y^2$

$x\frac{d^2y}{dx^2} + xy\frac{dy}{dx} + x^2 = y$ tenglama nechanchi tartibli

======

#ikkinchi

======

birinchi

======

bir jinsli

======

chiziqli

$x^2 y' + y = ax^2 e^{\frac{1}{x}}$. tenglamaning turini aniqlang

======

#chiziqli

======

Bernulli

======

Klero

======

Lagranj

Bernulli tenglamasini techish uchun … almashtirish bajariladi

======

# $z = \frac{1}{y^{n-1}}$

======

y=uv

======

y=ux

======

y=x+u

$xy' - 4y = x^2 \sqrt{y}$. tenglamaning turini aniqlang

======

#Bernulli

======

chiziqli

======

Klero

======

Lagranj

Agar noma’lum funksiya faqat bitta o‘zgaruvchiga bog‘liq bo‘lsa, bunday differensial tenglamaga … differensial tenglama deyiladi

======

#oddiy

======

tartibli

======

umumiy yechimli

======

xususiy yechimli

Agar noma’lum funksiya ikki yoki undan ortiq o‘zgaruvchiga bog‘liq bo‘lsa, bunday differensial tenglamaga … differensial tenglama deyiladi.

======

#xususiy hosilali

======

oddiy

======

yuqori tartibli

======

umumiy yechimli

Differensial tenglamaga kirgan hosilalarning eng yuqori tartibi tenglamaning ... deyiladi.

======

#tartibi

======

xususiy yechimi

======

chegarasi

======

umumiy yechimli

$x^3 y' + 8y - x + 5 = 0$ tenglamaning tartibini aniqlang.

======

#birinchi tartibli

======

ikkinchi tartibli

======

uchinchi tartibli

======

to‘rtinchi tartibli

Tenglamaning tipini aniqlang:

$$y^2 \frac{\partial z}{\partial x} + xy \frac{\partial z}{\partial y} = 0$$

======

#xususiy hosilali

======

ikkinchi tartibli

======

chiziqli

======

oddiy

O‘zgaruvchilari ajraladigan differensial tenglamani aniqlang.

======

# $\left(1-e^{2x}\right)ydx=e^{x}dy$

======

$$y'\ln y=y+x$$

======

$$(x^2+2xy)dy=(xy+y^2)dx.$$

======

$$y'-x^2y=xy^3$$

Agar chiziqli bir jinsli differensial tenglamada bir tomoni noldan farqli bo‘lmasa, u ...... tenglama deyiladi.

======

#chiziqli bir jinsli bo'lmagan

======

chiziqli bir jinsli bo'lgan

======

chiziqli ko'p tarmoqli

======

chiziqli bir koeffisientli

Differensial tenglamani yeching:

$$y' + \frac{3y}{x} = \frac{3}{x}$$

======

$$y = 1 + \frac{C}{x^3}$$

#

======

$$y = 1 - \frac{C}{x^3}$$

======

$$y = \frac{C + x}{x^3}$$

======

$$y = \frac{C - x}{x^3}$$

Bernulli tenglamasi qanday tenglamaga keltiriladi?

======

#Chiziqli

======

Bir jinsli

======

Eyler

======

Rikkati

Differensial tenglamada uning umumiy yechimidan ixtiyoriy o‘zgarmasning hech bir qiymatida hosil qilish mumkin bo‘lmagan yechim nima deb ataladi?

======

#maxsus yechim

======

xususiy yechim

======

umumiy yechim

======

maxsus nuqta

Ushbu $y = 2xy' + \sin y'$ tenglama ... tenglamasi deb ataladi.

======

#Lagranj

======

Bernulli

======

Klero

======

Rikkati

2(x+y)dy+(3x+3y-1)dx=0 tenglamaning turini aniqlang

======

#bir jinsliga keladigan

======

bir jinsli

======

chiziqli

======

$y'' = e^{-x} + x$ tenglamaning yeching

Bernulli ______

======

# $y = e^{-x} + \frac{x^3}{6} + C_1 x + C_2$

======

$y = e^{-x} + \frac{x^3}{6} + C_1$

======

$y = e^{-x} + \frac{x^3}{3} + C_1 x + C_2$

======

$y = e^{-x} + \frac{x^3}{2} + C_1 x + C_2$

Tenglamani yeching $y' = \frac{y}{x - y}$

======

# $x = y \ln\left(\frac{C}{y}\right)$

======

$y = x \ln\left(\frac{C}{y}\right)$

======

$$y = x\ln\left(\frac{C}{x}\right)$$

======

$$y = x\ln\left(\frac{y}{C}\right)$$

Bir jinsli differensial tenglama uchun Koshi masalasi aniqlang

======

# $\begin{cases} x^3y' = x^2y + y^3 \\ y(1) = 2 \end{cases}$

======

$$\begin{cases} y'' = 3x \cdot y \\ y(1) = 3 \end{cases}$$

======

$$\begin{cases} y' = x + yx^2 \\ y(1) = 2; y(2) = 5 \end{cases}$$

======

$$\begin{cases} y' = f(x, y) \\ x + y = 3 \end{cases}$$

Agar $y' + P(x)y = Q(x)$ tenglamaning o‘ng tomoni $Q(x) \equiv 0$ bo‘lsa, ……. tenglama bo‘ladi.

======

#chiziqli bir jinsli

======

Rikatti

======

to‘la differensial

======

Bernulli

Agar birinchi tartibli $y' = f(x, y)$ differensial tenglamaning o‘ng tomoni x va y ga nisbatan nol o‘lchovli bir jinsli funksiya bo‘lsa, bunday tenglama . . . tenglama deyiladi.

======

#bir jinsli differensial

======

oddiy differensial

======

umumiy yechimsiz

======

xususiy yechimli

$y' + P(x)y = Q(x)$ tenglamanini yechishning Lagranj usulida umumiy yechim … ko`rinishda izlanadi

======

#
$$y = C(x)e^{-\int P(x)dx}$$

======

$$y = C(x)e^{\int P(x)dx}$$

======

$$y = C(x)e^{P(x)}$$

======

$$y = e^{-\int P(x)dx}$$

Ushbu $y' = \dfrac{x+2y+4}{x+2y}$ tenglamani bir jinsliga keltirish uchun qanday almashtirish bajariladi?

======

#
$$\begin{cases} x = x_1 - 2 \\ y = y_1 - 1 \end{cases}$$

======

$$\begin{cases} x = x_1 - 2 \\ y = y_1 + 1 \end{cases}$$

======

$$\begin{cases} x = x_1 + 2 \\ y = y_1 + 1 \end{cases}$$

======

$$\begin{cases} x = x_1 + 2 \\ y = y_1 - 1 \end{cases}$$

Ushbu

$y' + P(x)y = Q(x)y^n$

ko‘rinishdagi tenglama qanday nomlanadi?

======

#Bernulli tenglamasi

======

Chiziqli tenglama

======

Eyler tenglamasi

======

Rikkati tenglamasi

Bernulli tenglamasi qanday tenglamaga keltiriladi?

======

#Chiziqli

======

Bir jinsli

======

Eyler

======

Rikkati

Quyidagilarni qaysi biri chiziqli tenglamaning umumiy ko‘rinishi?

======

# $y' + P(x)y = Q(x)$

======

$y' + P(x)y = Q(y)$

======

$y' + P(x)y = Q(x)y^n$

======

$y' + P(y)x = 0$

Tenglamani yeching $y' = \dfrac{y}{x+y}$

======

# $x = y\ln(Cy)$

======

$y = y\ln(Cx)$

======

$y = x\ln(Cy)$

======

$\ln y + \dfrac{y}{x} = C$

$$\left(y^2-2x^2\right)dy+2xydx=0$$

Differensial tenglamani $y(1)=1$ boshlanich shartni qanoatlantiruvchi xususiy yechimini toping

======

# $$x^2-y^2\left(1-\ln y\right)=0$$

======

$$x+y^2\left(-1+\ln y\right)=0$$

======

$$x^2-y^2\left(1+\ln y\right)=0$$

======

$$x^2-y\left(1-\ln y\right)=0$$

Tenglamani yeching
$$x^2y'=-y^2+xy$$

======

# $$y=\frac{x}{\ln x+C}$$

======

$$y=\frac{\ln x+C}{x}$$

======

$$y=x(\ln x+C)$$

======

$y = x\ln x + C$

Tenglamani yeching: $y^2 y' = x^2$

======

\# $y = \sqrt[3]{x^3 - C}$

======

$y = \sqrt[3]{x^2 - C}$

======

$y = x\sqrt[3]{x^3 - C}$

======

$y = x\sqrt[3]{x^2 - C}$

Differensial tenglamani yeching:
$y' + 3y = e^x$

======

\# $y = \dfrac{C + e^{4x}}{4e^{3x}}$

======

$y = \dfrac{C + e^{4x}}{e^{3x}}$

======

$y = \dfrac{C + e^{3x}}{4e^{4x}}$

======

$$y = \frac{C - e^{4x}}{4e^{3x}}$$

Quyidagilarning qaysi biri 1-tartibli chiziqli differensial tenglama?

======

# $y' + x^3 y + 3x^2 = 0$

======

$$y' + xy^2 + 2x = 0$$

======

$$y' + x^2 y^2 + x = 0$$

======

$$y' + x\sin y + 5 = 0$$

Quyidagilarning qaysi biri 1-tartibli chiziqli differensial tenglamaning umumiy ko`rinishi?

======

# $y' + p(x) \cdot y + q(x) = 0$

======

$$y' + p(x) \cdot y'' + q(x) = 0$$

======

$$y' = \varphi(x) \cdot g(y)$$

======

$y' = \varphi(x) + g(y)$

$y' + P(x)y = Q(x)$
tenglamanini yechishning Bernulli usulida umumiy yechim … ko‘rinishda qidirildi

======

# $y = uv$

======

$y = p'$

======

$y = \varphi(x)$

======

$y = pp'$

Tenglamani umumiy yechimini toping
$y' = 4x + y$

======

# $y = Ce^x - 4x - 4$

======

$y = e^x + x^2 + C$

======

$y = e^x + C\left(x^2 + x\right)$

======

$y = e^x + x + C$

Quyidagilarni qaysi biri chiziqli differnsial tenglamaning yechishning almashtirishi hisoblanadi

======

# $y = u(x) \cdot v(x)$

======

$y = x \cdot u(x)$

======

$y = u(x) \cdot v(y)$

======

$y = x \cdot v(y)$

Differensial tenglamani yeching:

$$y' - 2xy = e^{x^2}$$

======

#$y = (C + x)e^{x^2}$

======

$y = (C + x)e^x$

======

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

======

$y = C + xe^{x^2}$

---

Differensial tenglamani yeching:

$$y' + \frac{3y}{x} = \frac{3}{x}$$

======

# $y = 1 + \frac{C}{x^3}$

======

$y = 1 - \frac{C}{x^3}$

======

$y = \frac{C + x}{x^3}$

======

$y = \frac{C - x}{x^3}$

Ushbu

$y' + P(x)y = Q(x)y^n$

Bernulli tenglamasini chiziqli tenglamaga keltirish uchun qanday almashtirish qo‘llanadi?

======

$z = y^{-n+1}$,

# $z' = (-n+1)\, y^{-n} \cdot y'$

======

$$z = y^{-n+1},$$
$$z' = (-n+1)\,y^{-n}$$

======

$$y = u \cdot x$$
$$y' = u' \cdot x + u$$

======

$$y = u \cdot v$$
$$y' = u' \cdot v + u \cdot v'$$

Quyidagi tenglamalarni qaysi biri Bernulli tenglamasi hisoblanadi:

======

#$y' + P(x)\,y = Q(x)\,y^{\alpha}$

======

$$y' + P(x)y + Q(x)y^2 = F(x)$$

======

$$y' + Q(x)\,y^2 = F(x)$$

======

$$y' + Q(x)y^2 = F(x)y^{\alpha}$$

$1+y'^2=y\,y''$ tenglamada qanday almashtirish bajariladi?

======

# $y'=p,\ y''=p\dfrac{dp}{dy}$

======

$p=y',\ p'=y''$

======

$y'=p,\ y''=\dfrac{dp}{dy}$

======

$y'=p,\ y''=p\dfrac{dx}{dx}$

---

$y'+P(x)y=Q(x)y^n$ tenglamada $Q(x)$ qanday bo‘lsa, chiziqli bir jinsli tenglama deyiladi?

======

# $Q(x)\equiv 0$

======

$Q(x)\neq 0$

======

$Q(x) = 1$

======

$Q(x) = x$

$y'' = e^{-x}$ tenglamaning umumiy yechimini toping

======

# $y = e^{-x} + C_1 x + C_2$

======

$y = e^{-x} + C_1 x^2$

======

$y = -e^{-x} + C_1 x + C_2$

======

$y = e^{-x} + C_1 + C_2$

$y''' = x$ tenglamaning umumiy yechimini toping

======

# $y = \frac{1}{24} x^4 + \frac{1}{2} C_1 x^2 + C_2 x + C_3$

======

$y = x^2 + x + 1$

======

$$y = x^2 + C_1 x + C_2$$

======

$$y = x^2 - C_1 x + C_2$$

$xy'' = y' \ln \frac{y'}{x}$ tenglamada qanday almashtirish bajariladi?

======

$$p = y', \; p' = y''$$

#

======

$$y' = p, \; y'' = p\frac{dp}{dy}$$

======

$$y'' = p\frac{dp}{dy}$$

$M(x,y)dx + N(x,y)dy = 0$ tenglama to‘la differensial tenglama bo‘lishining zaruriy va yetarli shartini aniqlang.

======

# $\frac{\partial N}{\partial x} = \frac{\partial M}{\partial y}$

======

$$\frac{\partial M}{\partial x} = \frac{\partial N}{\partial y}$$

======

$$\frac{\partial N}{\partial x} \neq \frac{\partial M}{\partial y}$$

======

$$\frac{\partial^2 N}{\partial x \partial y} = \frac{\partial^2 M}{\partial y \partial x}$$

Quyidagi tenglama uchun integralovchi ko‘paytuvchi qanday bo‘ladi: $(x^2 - y)dx + (x^2 y^2 + x)dy = 0$

======

# $\mu(x) = \frac{1}{x^2}$

======

$$\mu(x) = \frac{1}{x}$$

======

$$\mu(x) = x$$

======

$\mu(x)=x^2$

Quyidagi tenglama uchun integralovchi ko‘paytuvchi qanday bo‘ladi:
$(1-yx)dx+x(y-x)dy=0$ ?

======

# $\mu(x)=\frac{1}{x}$

======

$\mu(x)=\frac{1}{x^2}$

======

$\mu(y)=\frac{1}{y^2}$

======

$\mu(y)=\frac{1}{y}$

Quyidagi tenglama uchun integralovchi ko‘paytuvchi qanday bo‘ladi:
$ydx-(x+y^2)dy=0$ ?

======

# $\mu(y)=\frac{1}{y^2}$

======

$\mu(y) = y^2$

======

$\mu(x) = \frac{1}{x}$

======

$\mu(x) = x$

Differensial tenglamada uning umumiy yechimidan ixtiyoriy o‘zgarmasning hech bir qiymatida hosil qilish mumkin bo‘lmagan yechim nima deb ataladi?

======

#maxsus yechim

======

xususiy yechim

======

umumiy yechim

======

maxsus nuqta

$(1-x^2)y'' - xy' = 2$ tenglamada qanday almashtirish bajariladi?

======

$p = y', \ p' = y''$

#

======

$p' = y''$

======

$p = y'$

======

$y' = p,\ y'' = p\dfrac{dp}{dy}$

$y''' = \cos x$ tenglamining umumiy yechimini toping

======

$y = -\sin x + \dfrac{C_1 x^2}{2} + C_2 x + C_3$
#

======

$y = -\sin x + C$

======

$y = \sin x + \dfrac{C_1 x}{2} + C_2$

---

======

$y = -\sin x + \dfrac{Cx^2}{2}$

№ 1. Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-1;

| |
|---|
| Tenglamalardan qaysilarini no‘malum funksiyaga nisbatan differensiyal tenglama bo‘ladi? <br> 1) $y'+2x=0$; 2) $y'+2y=0$; 3) $\frac{\partial^2 y}{\partial x^2}-z=1$; 4) $\frac{d^2 y}{dx^2}+5=0$. |
| 3 |
| 1,2,4 |
| 2 |
| hammasi. |

№ 2. Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-1;

| |
|---|
| Funksiyalardan qaysilari $\frac{dy}{dx}=y$ differensial tenglamaning yechimi bo‘ladi? <br> 1) $y=3e^{2x}$; 2) $y=5e^{x}$; 3) $y=e^{x+3}$; 4) $y=\frac{x^2}{2}-3$. |
| 2 |
| 1),2),3) |
| 2),3) ; |
| hammasi. |

№ 3 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-1;

| |
|---|
| Tenglamalardan qaysilari 3-tartibli oddiy differensial tenglama bo‘ladi? <br> 1) $y'''+2y''=0$, 2) $\frac{d^3 y}{dx^3}+y=0$, 3) $F(y,y'',y''')=0$, 4) $\frac{\partial^2 y}{dx^2}-y=0$. |
| 1 |
| 2,3 |
| 1,2,3 |
| hammasi. |

№ 4 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-1;

| |
|---|
| Hosilaga nisbatan yechilmagan 1- tartibli differensial tenglamani yeching: $y'^2-y^2=0$ |

| |
|---|
| $y=Ce^{\pm x}$ ; |
| $y=Ce^{x}$ ; |
| $y=Ce^{x}+e^{-x}$ |
| $y=Ce^{-x}$ |

№ 5 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-1;

| |
|---|
| $y''-4y'+3y=0$ tenglamani yeching. |
| $y=C_1e^{x}+C_2e^{3x}$v; |
| $y=C_1e^{-x}+C_2e^{-3x}$ |
| $y=C_1e^{-x}+C_2e^{-2x}$ |
| $y=C_1e^{x}+C_2e^{2x}$ |

№ 6 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-1;

| |
|---|
| $y^{II}-3y'=0$ tenglamani yeching. |
| $y=C_1e^{3C_2x}$ |
| $y=C_1+C_2e^{x}$ |
| $y=C_1+C_2e^{2x}$ |
| $y=C_1+C_2e^{3x}$ |

№ 7 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-1;

| |
|---|
| $2yxdx+x^2dy=0$ tenglamani yeching. |
| $x=Cy^2$ |
| $y=Cx^2$ |
| $y=\frac{C}{x^2}$ |
| $y=Cx^3$ |

№ 8 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-1;

| |
|---|
| $y''' = \dfrac{1+2y'}{y}$ tenglama qanday o’rniga qo’yish orqali yechiladi? |
| $y' = p(y)$; |
| $y' = p(x)$ |
| $y'' = p(x)$ |
| $y'' = p(y)$ |

№ 9  Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-1;

| |
|---|
| Yechimlari $k_1 = -1,\ k_2 = 3$ bo’lgan xarakteristik tenglamaga teng bo’lgan 2-tartibli o’zgarmas koeffisientli differensial tenglama tuzing. |
| ; $y'' + 2y' + 3y = 0$ |
| $y'' - 2y' - 3y = 0$ |
| $y'' - 2y' + 3y = 0$ |
| $y'' + 2y' - 3y = 0$ |

№10 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-1;

| |
|---|
| Qaysi bandda chiziqli tenglama keltirilgan? |
| $x' + e^y x = \sin y$; |
| $x \cos x dx + dy = \sin x$ |
| $dy + e^x y dx = x$ |
| $y' + xy^2 = x^2$ |

№11  Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-1;

| |
|---|
| $y^2 dx + 2xydy = 0$ tenglamani yeching |

| |
|---|
| $y=\sqrt{x}$ |
| $y=\dfrac{C}{x}$ |
| $y=Cx$ |
| $y=\dfrac{C}{\sqrt{x}}$ v; |

№12 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-1;

| |
|---|
| $y^{IY}-2y'''+y''=0$ tenglamaning yechimini toping |
| $y=C_1+C_2x+(C_3+C_4x)e^x$; |
| $y=(C_1+C_2)x+(C_3+C_4)e^x$ |
| $y=C_1+C_2x+C_3e^x+C_4e^{-x}$ |
| $y=C_1+C_2e^x$ |

№13 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-1;

| |
|---|
| $x+2\ln y=C$ tenglama nimani ifodalaydi? |
| skalyar maydon sath sirtini. |
| skalyar maydon sath chizig’ini |
| skalyar maydon gradiyentini |
| skalyar maydon potensialini |

№14 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-1;

| |
|---|
| Ushbu $xy'=y\ln\dfrac{y}{x}$ tenglama qanday ko‘rinishdagi tenglama bo‘ladi? |
| To‘liq differensialli |
| Bir jinsliga keltiriladigan |
| Chiziqli |
| Bir jinsli |

№15 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-1;

| |
|---|
| $y''+2y'+10y=0$ tenglamani yeching |
| $y=C_1e^{-x}+C_2\sin 3x+C_3\cos 3x$ |
| $y=C_1\cos 3x+C_2\sin 3x$ |
| $y=e^{-x}(C_1\cos 3x+C_2\sin 3x)$ |
| $y=C_1e^{-x}(\sin 3x+\cos 3x)$ |

№16 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| Tezligi $v=t^3$ qonuniyat bilan o‘zgarayotgan jism 2 sekundda 3m masofa bosib o‘tsa, uning harakat qonunini toping. |
| $s=\frac{1}{4}(t^2-4)$ |
| $s=t^4-13$ |
| $s=t^2-1$ |
| $s=t^2-5$ |

№17 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| Tezlanishi $a=6t$ funksiya bilan berilgan jismning harakat qonunini toping |
| $s=6$ |
| $s=t^3+C$ |
| $s=3t^2+C$ |
| $s=t^3+C_1t+C_2$ |

№18 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| Tezlanishi $a=t^2$ funksiya bilan berilgan jism tezligi qonuniyatini toping. |

| |
|---|
| $v=\frac{t^3}{3}+C$ |
| $v=t^2+C$ |
| $v=\frac{t^4}{12}+C_1t+C_2$ |
| $v=2t$ |

№19 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| $(3+y^2)dy=(2x+1)dx$ tenglamaning $y\|_{x=1}=3$ shartni qanoatlantiruvchi xususiy yechimni toping. |
| $y^3+9y-6x^2-48=0$ |
| $y^3-9y-3x^2+3x=0$ |
| $y^3+9y-3x^2-3x-48=0$ |
| $y^3+9y=3x^2+3x$ |

№20 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| Qaysi bandda o‘zgaruvchilari ajraladigan tenglama keltirilgan? |
| $ydx+e^{xy}dy=0$ |
| $\left(x^2+2xy\right)dx+xydy=0$ |
| $\left(x+x^2y\right)dx+\sin ydy=0$ |
| $y\sin xdx+y^2xdy=0$ |

№21 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| $y'=-\frac{3x+y-1}{x-3y+1}$ tenglama qanday o‘rniga qo’yish orqali yechiladi? |

| |
|---|
| $x = x_1 + \frac{1}{5}, \; y = y_1 + \frac{2}{5};$ |
| $x = x_1 - \frac{1}{5}, \; y = y_1 - \frac{2}{5};$ |
| $x = x_1 - 3, \; y = y_1 + 3;$ |
| $x = x_1 + 3, \; y = y_1 - 3.$ |

№22 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| Qaysi bandda bir jinsli funksiya keltirilgan? |
| $F = (x - y)^3 - 3xy^2$ |
| $F = (x + y)^3 + xy$ |
| $F = x^2 + y^2 - xy^2$ |
| $F = x^2 + y^2 + xy^2$ |

№23 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| $y' = \sin x + yx$ tenglama qanday o‘rniga qo‘yish orqali yechiladi? |
| $y = uv$ |
| $y = ce^x$ |
| $x = uv$ |
| $y = ux$ |

№24 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| $y' = \frac{y}{x} + \frac{x^2}{y^2}$ tenglama yechimi qaysi bandda keltirilgan? |
| $y^3 = 3x^3 \ln xC$ |
| $y^3 = x^3 \ln xC$ |
| $x^3 = y^3 \ln yC.$ |

| |
|---|
| $x^3 = 3y^3 \ln xC$ |

№25 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| $\frac{d^2y}{dx^2} = 1 - \frac{2}{x^2}$ tenglamani yeching. |
| $y = \frac{x^2}{2} + 2\ln\|x\| + C_1x + C_2$. |
| $y = x + \frac{1}{x} + C_1$ |
| $y = x^2 + \ln\|x\| + C_1x + C_2$ |
| $y = \frac{x^2}{2} + \ln\|x\| + C_1$ |

№26 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| $y' + e^x y = y^4 e^{2x}$ tenglama qanday o’rniga qo’yish orqali yechiladi? |
| $y = ux$ |
| $y = uv$ |
| $z = y^{-4}$ |
| $z = y^{-3}$ |

№27 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| Funksiyalardan qaysilari bir xil darajali bir jinsli bo’ladi?<br>1) $F = x^2 + y^2 - xy$; 2) $F = (x+y)^2 + xy$; 3) $F = x^2 - y^2 - x^2 y$; 4) $F = xy$. |
| 1,2,4 |
| hammasi |
| 1,3 |
| 2,3 |

№28  Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| |
|---|
| $k$ ning qanday qiymatida $x^3y^3dx + ky^2x^4dy$ funksiya to'liq differensialli bo'ladi? |
| $\frac{4}{3}$ |
| $\frac{3}{4}$ |
| $-\frac{3}{4}$ |
| $\frac{1}{3}$ |

№29 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| |
|---|
| Bir jinsli tenglamani yeching. $xy^{`} - y = (x+y)ln\frac{x+y}{x}$ |
| $\ln\frac{x+y}{x} = Cx$ |
| $x = \ln(x+y) + C$ |
| $\ln(x-y) = Cx^2$ |
| $y = x - \ln\lvert x\rvert + \mathrm{C}$ |

№30 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| |
|---|
| O‘zgaruvchilari ajraladigan differensial tenglamani yeching. $e^{-z}(1+\frac{dz}{dt}) = 1;$ |
| $e^t - 1 = C \cdot e^z$ |
| $\frac{1}{e^t} + 1 = e^z$ |
| $e^z \cdot e^t - 1 = C$ |

| |
|---|
| $e^{-z} = 1 + Ce^{t}$ |
| |

№31 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| |
|---|
| Qaysi bandda bir jinsli teglama keltirilgan? |
| $(x^2 + xy)dx + y^2 dy = 0$ |
| $y' = \dfrac{x^2 + 2xy}{x + y}$ |
| $(1 + x^2)dx + yxdy = 0$ |
| $xydx + (x^2 - y)dy = 0$ |

№32 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| |
|---|
| Tenglamalardan qaysilari chiziqli?<br><br>1) $y' + xy^2 = x$; 2) $y' + e^x y = x$; 3) $x' + yx = \sin y$; 4) $y'' + 2xy = 1$. |
| hammasi |
| . 2,3 |
| 1,3 |
| 1,2 |

№33  Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| |
|---|
| $2xy'''y^{IY} = 3 + y'''$ tenglamada qanday o’rniga qo’yish bajariladi? |
| $y''' = p(x)$. |
| $y' = p(y)$ |
| $y' = p(x)$ |

| |
|---|
| $y'' = p(x)$ |

№34  Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| |
|---|
| Yechimlari $k_1 = k_2 = 4$ bo’lgan xarakteristik tenglamaga mos differensial tenglamani tuzing. |
| $y = C_1 e^{4x}$ |
| $y = C_1 e^{4x} + C_2 e^{4x}$ |
| $y = (C_1 + C_2) e^{4x}$ |
| $y = e^{4x}(C_1 + C_2 x)$ |

№35  Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| |
|---|
| Yechimlari $k_1 = k_2 = 2$ bo’lgan xarakteristik tenglamaga mos differensial tenglamani tuzing. |
| $y = C_1 e^{2x} + C_2 e^{2x}$ |
| $y = e^{2x}(C_1 + C_2 x)$ |
| $y = (C_1 + C_2) e^{x^2}$ |
| $y = C_1 e^{2x}$ |

№36 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| |
|---|
| $\vec{a} = \{x^2; y; z\}$ maydon divergensiyasini toping. |
| $2(x+1)$. |
| 3 |
| 0 |
| $x^2 + y + z$ |

№37 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| |
|---|
| $\left(x^2+x\right)y'=2y+1$ tenglamani yeching. |
| $2y+1=\frac{Cx^2}{(1+x)^2}$ |
| $2y=\frac{Cx^2}{(1+x)^2}$ |
| $y+1=\frac{Cx^2}{(1+x)^2}$ |
| $y=x-\ln\lvert x\rvert+\mathrm{C}$ |

№38 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| Quyidagilardan qaysi biri $(x^2-1)dx=-y^3dy$ tenglamaning yechimi bo’ladi? |
| $3y^4-4x+4x^3=1$ |
| $3y^4-12x+4x^3=1$ |
| $y^4+x^3-x=C$ |
| $3y^4+12x-4x^3=0$ |

№39 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| $y'+yx=y^3\sin x$ tenglama qanday o’rniga qo’yish orqali yechiladi? |
| $z=\frac{1}{y}$ |
| $z=y^2$ |
| $z=y^3$ |
| $z=\frac{1}{y^2}$ |

№40 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| $y'' + x = arctgx$ tenglama qanday usulda yechiladi? |
| o'ng tomonining xususiy yechimini tanlab |
| o'zgarmasni variatsialab |
| Bernulli formulasi bilan |
| ketma-ket integrallab |

№41 Fan bo'limi- Differensial tenglamalar; Qiyinlik darajasi-3;

| |
|---|
| $y' - \frac{y}{x} = 2x^2$ tenglama yechimini toping. |
| $y = Cx + 3x^3$ |
| $y = C + 3x^2$ |
| $y = x(C + x^2)$ |
| $y = x^3$ |

№42 Fan bo'limi- Differensial tenglamalar; Qiyinlik darajasi-3;

| |
|---|
| Koshi masalasini yeching: $x - 3y^2 y' = 0, \quad y\|_{x=1} = 1.$ |
| $x^2 = 2y^3 - 1$ |
| $y^2 = 2x^3 - 1$ |
| $x^2 + y^2 = 1$ |
| $y^2 = 2x^3 + 1$ |

№43 Fan bo'limi- Differensial tenglamalar; Qiyinlik darajasi-3;

| |
|---|
| $y^V - 6y^{IV} + 9y^{III} = 0$ tenglamani yeching. |
| $y = e^{3x}(C_1 + C_2 x) + C_3 + C_4 x + C_5 x^2$ |
| $y = C_1 \cos 2x + C_2 \sin 2x;$ |

| |
|---|
| $y = C_1 e^{2x} + C_2 e^{-2x}$ |
| $y = C_1 e^{2x} + C_2 e^{3x}.$ |

№44 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-3;

| |
|---|
| Xarakteristik tenglamasi $k_{1,2} = 0,\ k_{3,4} = 1 \pm 2i$ yechimlarga ega bo’lgan differensial tenglamani tuzing. |
| $y''' - 2y'' + 5y' = 0$ |
| $y^{IY} - 2y''' + 5y' = 0$ |
| $y^{IY} + 2y''' + 5y'' = 0$ |
| $y^{IY} - 2y''' + 5y'' = 0$ |

№45 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-3;

| |
|---|
| Berilgan differensial tenglamaning xususiy yechimini aniqlang: $y'' + y' = 3x^2$ |
| $y = x^3 - 3x^2$ |
| $y_1 = 5x^4 + 4x^2$ |
| $y_1 = x^4 - x^3 + 7x^2$ |
| $y_1 = ax^2 + bx + c$ |

№46 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-3;

| |
|---|
| Tenglamaning xususiy yechimini toping: $xy' + y - 2x = 0,\ y\big|_{x=-1} = 2.$ |
| $x(x - y) = 3$ |
| $x^2 - y^2 = -3$ |

| |
|---|
| $x(y+x)=-1;$ |
| $y(x-y)=-6;$ |

№47 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-3;

| |
|---|
| $k^2-1=0$ xarakteristik tenglama va $\bar{y}=xe^x$ xususiy yechimga mos tenglama tuzing. |
| $y''-y=2e^x$ |
| $y''-y=2xe^x$ |
| $y''-y=xe^x$ |
| $y''+y=3e^x$ |

№48 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-3;

| |
|---|
| Qanday almashtirish yordamida $y'=y^2-\frac{2}{x^2}$ tenglamani bir jinsli tenglamaga keltirish mumkin? |
| $y=zx$ |
| $z=y^2$ |
| $y=zx^{-1}$ |
| $z=\sqrt{y}$ |

№49 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-3;

| |
|---|
| $y''-6y'+by=0, b$ –ning qanday qiymatida differensial tenglamaning xarakteristik sonlari teng bo’ladi |
| 6 |
| 8 |
| 7 |

| |
|---|
| 9 |

№ 50 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-1;

| |
|---|
| Differensial tenglama ta’rifini ko‘rsating . |
| noma’lum funksiyaning hosilalari qatnashgan tenglama . |
| noma’lum funksiyaning turli qiymatlari qatnashgan tenglama . |
| noma’lum funksiya va uning integrallari qatnashgan tenglama . |
| noma’lum funksiya va uning hosilalarining $x_0$ nuqtadagi qiymatlari qatnashgan tenglama . |

№51 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-1;

| |
|---|
| Quyidagilardan qaysi biri differensial tenglama bo‘ladi ? |
| $y(x)+2\,y'(x_0)–x=0$ |
| $3x^2+4xy–1=0$ . |
| .$y–2xy'+5=0$ .. |
| $x^2+xy–1=0$ |

№52 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| $(\alpha^2-1)y'+\alpha y+5x+9=0$ tenglama α parametrning qanday qiymatlarida differensial tenglama bo’ladi? |
| $\alpha\neq-1$ |
| $\alpha\neq0$ |
| $\alpha\neq1$ |
| $\alpha\neq\pm1$ |

№53 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-3;

| |
|---|
| $(\alpha^2-1)y''+\alpha y'+5xy+7=0$ tenglama α parametrning qanday qiymatlarida differensial tenglama bo’ladi? |
| $\alpha\in(-\infty, \infty)$ |
| $\alpha\neq1$ |
| $\alpha\neq-1$ |
| $\alpha\neq\pm1$ |

№ 54 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| ***Ta’rifni to‘ldiring:*** Differensial tenglamaning tartibi deb unda qatnshuvchi noma’lum funksiya hosilalarning ……… aytiladi . |
| eng katta qiymatiga |
| eng katta darajasiga |
| eng katta tartibiga |
| soniga |

№ 55 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| $(y')^3-(y')^2+y''-y+5y^4+x^5=0$ differensial tenglama nechanchi tartibli ? |
| 2 |
| 3 |
| 4 |
| 5 |

№ 56 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-1;

| |
|---|
| Differensial tenglamaning yechimi yana nima deb ataladi ? |
| integral |
| ildiz |
| differensial |
| boshlang’ich funksiya |

№ 57 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| Quyidagi funksiyalardan qaysi biri $y''+4y=0$ differensial tenglamaning yechimi bo’ladi? |
| $y=\cos 2x$ |
| $y=x^4$ |
| $y=2x^2$ |
| $y=e^{2x}$ |

№ 58 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-3;

| |
|---|
| $\lambda$ parametrning qanday qiymatida $y=e^{\lambda x}$ funksiya $y'-4y=0$ differensial tenglamaning yechimi bo’ladi? |
| $\lambda=-4$ |
| $\lambda=4$ |
| $\lambda=-2$ |
| $\lambda=2$ |

№ 59 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| $\lambda$ parametrning qanday qiymatida $y=e^{\lambda x}$ funksiya $y''-4y=0$ differensial tenglamaning yechimi bo’ladi? |
| $\lambda=\pm 2$ |
| $\lambda=-4$ |
| $\lambda=4$ |
| $\lambda=1$ |

№ 60 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-1;

| |
|---|
| $y=y(x, C_1, C_2, ..., C_n)$ funksiyalar sinfi $n$-tartibli differensial tenglamaning umumiy yechimi bo’lishi uchun quyidagi shartlardan qaysi biri talab etilmaydi ? |

| |
|---|
| bu funksiyalar $C_1$ , $C_2$ , ..., $C_n$ o’zgarmaslarning ixtiyoriy qiymatlarida chegaralangan . |
| bu funksiyalar $C_1$ , $C_2$ , ..., $C_n$ o’zgarmaslarning ixtiyoriy qiymatlarida berilgan differensial tenglamaning yechimi bo’ladi . |
| bu funksiyalar $C_1$ , $C_2$ , ..., $C_n$ o’zgarmaslarning ma’lum bir qiymatlarida ixtiyoriy boshlang’ich shartlani qanoatlantiradi . |
| keltirilgan barcha shartlar talab etiladi . |

№ 61 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-1;

| |
|---|
| $n$-tartibli differensial tenglama uchun qanday yechim tushunchasi aniqlanmagan ? |
| .xususiy yechim |
| umumiy yechim . |
| normal yechim . |
| umumiy integral . |

№ 62 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-1;

| |
|---|
| $n$-tartibli differensial tenglama umumiy integrali qanday ko’rinishda bo’ladi? |
| $\Phi((x, y, C_1 , C_2 , ..., C_n)=0$ . |
| $\Phi((y, C_1 , C_2 , ..., C_n)\pm x=0$ . |
| $\Phi((x, C_1 , C_2 , ..., C_n)-y=0$ . |
| $\Phi((x, C_1 , C_2 , ..., C_n)+y=0$ . |

№ 63 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| I tartibli $y'+P(x)y=Q(x)$ chiziqli differensial tenglama qaysi holda eng sodda differensial tenglamaga aylanadi? |
| $Q(x)\neq 0$ |
| $Q(x)>0$ . |
| $Q(x)=0$ . |
| $P(x)=0$ . |

№ 64 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-1;

| |
|---|
| I tartibli $y'+P(x)y=Q(x)$ chiziqli differensial tenglama qaysi holda bir jinsli deyiladi? |
| .$P(x)=0$ |
| $Q(x)>0$ . |
| $Q(x)\neq 0$ . |
| .$Q(x)=0$ |

№ 65 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-1;

| |
|---|
| I tartibli chiziqli differensial tenglama qanday ko‘rinishda bo‘ladi ? |
| $y'+P(x)y=Q(x)$ . |
| $y'=f(x+y)$ . |
| $y'=f(x/y)$ . |
| $M_1(x) N_1(y)dx+ M_2(x)N_2(y)dy=0$ . |

№ 66 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-1;

| |
|---|
| I tartibli bir jinsli differensial tenglamani qanday almashtirma yordamida integrallanadi ? |
| $y=ux$ . |
| $y=u/x$ . |
| $y=u+x$ . |
| $y=u–x$ . |

№ 67 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-1;

| |
|---|
| I tartibli bir jinsli differensial tenglamani ko‘rsating . |
| $y'=f(x/y)$ . |
| $y'=f(xy)$ . |
| $y'+P(x)y=Q(x)$ . |
| $M(x)\mathrm{d}x+N(y)\mathrm{d}y=0$ . |

№ 68 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-1;

| |
|---|
| I tartibli o‘zgaruvchilari ajraladigan differensial tenglamani ko‘rsating . |
| $M_1(x)\, N_1(y)\mathrm{d}x+ M_2(x)N_2(y)\mathrm{d}y=0$ . |
| $y'=f(x/y)$ . |
| $y'+P(x)y=Q(x)$ . |
| $M(x)\mathrm{d}x+N(y)\mathrm{d}y=0$ . |

№ 69 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| |
|---|
| O‘zgaruvchilari ajralgan $\frac{dx}{\sqrt{x}}+\frac{dy}{\sqrt{y}}=0$ differensial tenglamaning umumiy integralini toping. |
| .$\frac{x}{2}+\frac{y}{2}=C$ |
| .$\sqrt{x}+\sqrt{y}=C$ |
| $x^2+4y^2=C$ . |
| $\frac{\sqrt{x}}{y}+\frac{\sqrt{y}}{x}=C$ . |

№ 70 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-1;

| |
|---|
| I tartibli o‘zgaruvchilari ajralgan differensial tenglamani ko‘rsating . |
| $M(x)\mathrm{d}x+N(y)\mathrm{d}y=0$ . |
| $M_1(x)\, N_1(y)\mathrm{d}x+ M_2(x)N_2(y)\mathrm{d}y=0$ . |
| $y'=f(x/y)$ . |
| $y'+P(x)y=Q(x)$ . |

№ 71 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-3;

| |
|---|
| I tartibli eng sodda $y'=xe^x$ differensial tenglamani integrallang . |
| $y=(x+1)e^x+C$ |
| $y=xe^x+C$ |
| $y=(x-1)e^x+C$ |
| $y=(x-2)e^x+C$ |

№72  Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-1;

| |
|---|
| I tartibli eng sodda differensial tenglama qanday ko‘rinishda bo‘ladi ? |
| $y'=f(y')$ |
| $y'=f(x,y)$ |
| $y'=f(y)$ |
| $y'=f(x)$ |

№ 73 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-1;

| |
|---|
| I tartibli  tenglama uchun Koshi masalasi Koshi teoremasi shartlarida nechta yechimga ega ? |
| faqat bitta |
| kamida bitta |
| ko‘pi bilan bitta |
| cheksiz ko‘p |

№  74 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| |
|---|
| Ushbu to‘liq differensialli tenglamaning umumiy yechimini toping: $(e^y+ye^x+3)dx+(e^x+xe^y-2)dy=0$ |
| $xe^y+ye^x+3x-2y=C$ |
| $xe^y-ye^x-2x-3y=C$ |
| $xe^y-ye^x+2x-3y=C$ . |
| $xe^y+ye^x-3x+2y=C$ . |

№ 75 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| |
|---|
| $(e^y+\alpha ye^x+3)dx+(e^x+xe^y-2)dy=0$ tenglama $\alpha$ parametrning qanday qiymatida to’liq differensialli tenglama bo’ladi? |
| $\alpha=0$ |
| $\alpha=-1$ . |
| .$\alpha=1$ |
| $\alpha=\pm1$ . |

№ 76 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-3;

| |
|---|
| Quyidagilardan qaysi biri to‘liq differensialli tenglama bo‘ladi ? |
| $(3x^2y^2+7)dx+2x^3ydy=0$ |
| $(3x^2+y^2+7)dx+2x^3ydy=0$ . |
| $(3x^2y^2+7)dx+(2x^3+y)dy=0$ . |
| $(3x^2-y^2-7)dx-2(x^3+y)dy=0$ . |

№ 77 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| |
|---|
| Qaysi shartda $M(x,y)dx+N(x,y)dy=0$ to‘liq differensialli tenglama bo‘ladi? |
| $\frac{\partial M}{\partial x}=\frac{\partial N}{\partial y}$ |
| $.\frac{\partial M}{\partial y}=\frac{\partial N}{\partial x}$ |
| $\frac{\partial^2 M}{\partial x^2}=\frac{\partial^2 N}{\partial y^2}$ . |
| $\frac{\partial^2 M}{\partial x^2}+\frac{\partial^2 N}{\partial y^2}=1$ . |

№ 78 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-1;

| |
|---|
| $y'+P(x)y=Q(x)y^n$ $(n\neq 0,\ n\neq 1)$ Bernulli tenglamasi qanday almashtirma yordamida chiziqli tenglamaga keltiriladi? |
| $z=y^{1-n}$ . |
| $z=y^n$ . |
| $z^n=y$ . |
| $z=y^{n-1}$ . |

№ 79 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| |
|---|
| Bernulli tenglamasi qaysi javobda to’g’ri ifodalangan? |
| $y'+P(x)y=Q(x)y^n$ $(n\neq 0,\ n\neq 1)$ . |
| $y'+P(x)y^n=Q(x)$ $(n\neq 0,\ n\neq 1)$ . |
| $y'+P(x)y=Q(x)/y^n$ $(n\neq 0,\ n\neq 1)$ . |
| $y'+P(x)/y^n=Q(x)$ $(n\neq 0,\ n\neq 1)$ . |

№ 80 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| |
|---|
| I tartibli chiziqli $y'+y=2e^x$ differensial tenglamani integrallang . |
| $y=Ce^{2x}+1$ |

| |
|---|
| $y = Ce^{x} + e^{-x}$ |
| $y = C_1e^{x} + C_2e^{-x}$ |
| $y = e^{x} + Ce^{-x}$ |

№ 81 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-1;

| |
|---|
| I tartibli $y'+P(x)y=Q(x)$ chiziqli differensial tenglama qaysi holda eng sodda differensial tenglamaga aylanadi? |
| $P(x)=0$ . |
| $Q(x)>0$ . |
| $Q(x)=0$ . |
| $Q(x)\neq 0$ . |

№ 82 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-1;

| |
|---|
| I tartibli $y'+P(x)y=Q(x)$ chiziqli differensial tenglama qaysi holda bir jinsli deyiladi? |
| $Q(x)>0$ . |
| $Q(x)=0$ . |
| $Q(x)\neq 0$ . |
| $P(x)=0$ . |

№ 83 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-1;

| |
|---|
| I tartibli chiziqli differensial tenglama qanday ko‘rinishda bo‘ladi ? |
| $y'+P(x)y=Q(x)$ . |
| $y'=f(x+y)$ . |
| $y'=f(x/y)$ . |
| $M_1(x)\, N_1(y)dx+ M_2(x)N_2(y)dy=0$ . |

№ 84 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-1;

| |
|---|
| I tartibli bir jinsli differensial tenglamani qanday almashtirma yordamida integrallanadi ? |
| $y=ux$ . |
| $y=u/x$ . |
| $y=u+x$ . |
| $y=u-x$ . |

№ 85 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-1;

| |
|---|
| I tartibli bir jinsli differensial tenglamani ko‘rsating . |
| $y'+P(x)y=Q(x)$ |
| $y'=f(xy)$ . |
| . $y'=f(x/y)$ . |
| $M(x)dx+N(y)dy=0$ . |

№ 86 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-1;

| |
|---|
| II tartibli hosilaga nisbatan yechilgan differensial tenglamaning umumiy ko‘rinishi qayerda to‘g‘ri ko‘rsatilgan ? |
| $y''= f(x, y, y')$ . |
| $y''= f(x, y, y', y'')$ . |
| $y''= f( y, y', y'')$ . |
| $y''= f(y, y')$ . |

№ 87 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| |
|---|
| Quyigagi differensial tenglamalardan qaysi biri II tartibli ? |
| $y' + 2y - x^2 = 0$ |
| $(y')^2 + 2yy' - x = 0$ . |
| $y' + 2y^2 - x = 0$ . |
| . $y'' + 2y - x = 0$ |

№ 88 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| |
|---|
| II tartibli differensial tenglama uchun Koshi masalasi qayerda to‘g‘ti ifodalangan ? |
| $y'' = f(x, y, y')$ , $y(x_0) = y_0$ , $y'(x_0) = y_0'$ |
| $y'' = f(x, y, y')$ , $y(x_0) = y_0$ , $y(x_1) = y_1$ . |
| $y'' = f(x, y, y')$ , $y(x_0) = y_0$ , $y'(x_1) = y_1'$ . |
| $y'' = f(x, y, y')$ , $y(x_0) = y'(x_0) = y_0$ . |

№ 89 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| |
|---|
| II tartibli differensial tenglamani tartibni pasaytirish usulida integrallash uchun qanday almashtirma bajariladi ? |
| .$y''=p$ . |
| $y=p$ . |
| $y'=p$ |
| $yx=p$ . |

№ 90 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-1;

| |
|---|
| Quyidagi II tartibli differensial tenglamalardan qaysi birini tartibni pasaytirish usulida integrallab bo‘lmaydi ? |
| $y''= xy$ . |
| $y''= xy'$ . |
| $y''= yy'$ . |
| $y''= x$ . |

№ 91 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| |
|---|
| Quyidagi II tartibli differensial tenglamalardan qaysi birini tartibni pasaytirish usulida integrallab bo‘lmaydi ? |
| $y''= y+y'$ . |
| $y''= x+y'$ . |
| $y''= x+y$ . |
| $y''= x+1$ . |

№ 92 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-1;

| |
|---|
| II tartibli eng sodda differensial tenglamani ko‘rsating . |
| $y''= f(x)$ . |
| $y''= f(x,y)$ . |
| $y''= f(x,y')$ . |
| $y''= f(y,y')$ . |

№ 93 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-3;

| |
|---|
| $y''=12x+2$ , $y(0)=1$ , $y'(0)=2$ Koshi masalasining yechimini toping . |
| $y=4x^3+x^2+3x+1$ |
| $y=4x^3+x^2+2x+1$ . |
| $y=4x^3+x^2+4x+1$ . |
| $y=4x^3+x^2-x+1$ . |

№ 94 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-3;

| |
|---|
| $y''=f(x,y')$  ko‘rinishdagi differensial tenglamani tartibni pasaytirish usulida integrallash uchun qanday almashtirmadan foydalaniladi ? |
| $y'= p(x)$ . |
| $y''= p(x)$ . |
| $y'= p(y)$ . |
| $y''= p(y)$ . |

№ 95 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-3;

| |
|---|
| $y''=y'/x$ , $y(1)=5$, $y'(1)=4$ Koshi masalasining yechimini tartibni pasaytirish usulida toping. |
| $y=3+2x^2$ . |
| $y=2+2x+x^2$ . |
| $y=4.5+0.5/x$ . |
| $y=1+4x$ . |

№ 96 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-3;

| |
|---|
| $y''=y'/x$ , $y(1)=5$, $y'(1)=4$ Koshi masalasi yechimining $x=0$ nuqtadagi qiymati $y(0)$ nimaga teng ? |
| $y(0)=3$ . |
| $y(0)=-1$ . |
| $y(0)=0$. |

| |
|---|
| $y(0)=1$. |

№ 97 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-3;

| |
|---|
| $y''=(y')^2/y$ differensial tenglama qanday almashtirma yordamida integrallanadi ? |
| $y'=p(y)$ . |
| $y=p(x)$ . |
| $y'=p(x)$ . |
| $y''=p(x)$ . |

№ 98 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-3;

| |
|---|
| $y''=(y')^2/y$ differensial tenglamaning umumiy yechimini tartibni pasaytirish usulida toping . |
| $y=C_1+e^{C_2x}$ |
| $y=C_1e^{-x}+C_2$ . |
| . $y=C_1e^{C_2x}$ |
| $y=C_1e^{x}+C_2$ . |

№ 99 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-3;

| |
|---|
| $y''=(y')^2/y$ , $y(0)=2$, $y'(0)=6$ Koshi masalasi yechimining $x=1$ nuqtadagi $y(1)$ qiymati nimaga teng ? |
| $y(1)=2e^3$ . |
| $y(1)=8-6e^{-1}$ . |
| $y(1)=6e-4$ . |
| $y(1)=-2e^{-3}+4$ . |

№ 100 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-3;

| |
|---|
| $y''=y'$ tenglamaning umumiy yechimini tartibni pasaytirish usulida toping. |
| $y=C_1e^{x}+C_2$ . |
| $y=C_1e^{C_2x}$ . |
| $y=C_1+e^{C_2x}$ . |
| $y=e^{C_1x+C_2}$ . |

№ 101 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-1;

| |
|---|
| Quyidagilardan qaysi biri II tartibli chiziqli differentsal tenglama bo‘ladi? |
| $y''+a_1y'+a_2y=f^2(x)$ . |
| $(y'')^2+a_1y'+a_2y=f(x)$ . |
| $y''+a_1(y')^2+a_2y=f(x)$ . |

| |
|---|
| $y'' + a_1 y' + a_2 y^2 = f(x)$ |

№ 102 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-1;

| |
|---|
| Qaysi shartda II tartibli chiziqli $y'' + a_1 y' + a_2 y = f(x)$ differentsaial tenglama bir jinsli deyiladi ? |
| $f(x) \approx 0$ |
| $f(x) > 0$ . |
| $f(x) \neq 0$ . |
| .$f(x) = 0$ . |

№ 103 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| Quyidagi II tartibli chiziqli tenglamalardan qaysi biri bir jinsli emas ? |
| $y'' - 3 = 0$ . |
| $y'' - 3y' = 0$ . |
| $y'' - 3y = 0$ . |
| $y'' - 3y' + 3y = 0$ . |

№ 104 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| II tartibli chiziqli $y'' + a_1 y' + a_2 y = f(x)$ differentsaial tenglama quyidagi hollardan qaysi birida bir jinslimas bo‘ladi ? |
| barcha hollarda bir jinslimas bo‘ladi . |
| . $f(x) < 0$ |
| . $f(x) > 0$ |
| $f(x) \approx 0$ . |

№ 105 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-1;

| |
|---|
| Quyidagilardan qaysi biri II tartibli o‘zgarmas koeffitsientli chiziqli differensial tenglama bo‘lmaydi ? |
| $y'' - 4y^2 = 0$ |
| $y'' - 4y' = 0$ . |
| $y'' - 4y = 0$ . |
| $y'' - 4x = 0$ . |

№ 106 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| Quyidagi hollardan qaysi birida II tartibli chiziqli differensial tenglamaning ikkita $y_1$ va $y_2$ xususiy yechimlari chiziqli erkli bo‘ladi ? |
| $2y_1/y_2 = -1$ |
| $2y_1 - y_2 = 0$ . |

| |
|---|
| $2y_1/y_2=1$ . |
| .$2y_1+y_2=1$ |

№ 107 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-1;

| |
|---|
| Agar $y_1$ va $y_2=y_1+C$ ($C\neq 0$) bo’lsa, $C$ parametrning qanday qiymatlarida $y_1$ va $y_2$ funksiyalar chiziqli bog’liq bo’lmaydi? |
| $C<0$ |
| $C>0$ . |
| $C\in\varnothing$ . |
| ixtiyoriy $C\neq 0$ uchun . |

№ 108 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-1;

| |
|---|
| $y_1=\cos^2 x$ , $y_2=1-\cos 2x$ , $y_3=1+\cos 2x$ funksiyalardan qaysi juftlik chiziqli bog‘liq bo‘ladi ? |
| $y_1$ va $y_3$ |
| $y_1$ va $y_2$ .                 . |
| $y_2$ va $y_3$ . |
| uchala jurtlik ham juftlik chiziqli bog‘liq emas . |

№ 109 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| |
|---|
| Quyidagilardan qaysi biri $y_1$ va $y_2$ funksiyalarning Vronskiy aniqlovchisini ifodalamaydi ? |
| keltirlgan barcha aniqlovchilar Vronskiy aniqliochisini ifodalaydi . |
| $\begin{vmatrix} y_1' & y_2' \\ -y_1 & -y_2 \end{vmatrix}$ |
| $\begin{vmatrix} y_1 & y_2 \\ y_1' & y_2' \end{vmatrix}$ . |
| . $\begin{vmatrix} y_1 & y_1' \\ y_2 & y_2' \end{vmatrix}$ |

№ 110 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-1;

| |
|---|
| $y_1=\cos x$ va $y_2=\sin x$ funksiyalarning Vronskiy aniqlovchisi W($y_1$, $y_2$) qayerda to‘g‘ri ko‘rsatilgan ? |
| W($y_1$, $y_2$)=1 . |
| W($y_1$, $y_2$)=$\cos x+\sin x$ . |
| W($y_1$, $y_2$)= $\cos x-\sin x$ . |
| W($y_1$, $y_2$)= $\cos x\cdot\sin x$ . |

№ 111 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| |
|---|
| $y_1=e^x$ va $y_2=e^{-x}$ funksiyalarning Vronskiy aniqlovchisi W($y_1$, $y_2$) qayerda to‘g‘ri ko‘rsatilgan ? |
| .W($y_1$, $y_2$)= $e^{-2x}$ |

| |
|---|
| $W(y_1, y_2)= e^{2x}$ . |
| $W(y_1, y_2)=-2$ |
| $W(y_1, y_2)= -1$ . |

№ 112 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| |
|---|
| $y_1=e^x\cos x$ va $y_2=e^x\sin x$ funksiyalarning Vronskiy aniqlovchisi $W(y_1, y_2)$ qayerda to‘g‘ri ko‘rsatilgan ? |
| $W(y_1, y_2)= e^{2x}(\cos x+\sin x)$ |
| .$W(y_1, y_2)= e^{2x}$ . |
| $W(y_1, y_2)= e^{2x}(\cos x+\sin x)$ . |
| $W(y_1, y_2)= e^{2x}\cos x\cdot\sin x$ . |

№ 113 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-1;

| |
|---|
| $Y^*$ matritsa I tartibli chiziqli bir jinslimas normal sistema, $Y_0$ matritsa tegishli bir jinsli sistema yechimlari bo‘lsin. Bu holda quyidagi Y matritsalardan qaysi biri berilgan bir jinslimas sistemaning yechimi bo‘ladi ? |
| $Y=Y^*\pm Y_0$ . |
| $Y=Y^*\cdot Y_0$ . |
| $Y=Y_0\cdot Y^*$ . |
| $Y=Y_0-Y^*$ . |

№ 114 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-1;

| |
|---|
| $Y^*$ matritsa I tartibli chiziqli bir jinslimas normal sistema, $Y_0$ matritsa tegishli bir jinsli sistema yechimlari bo‘lsin. Bu holda quyidagi Y matritsalardan qaysi biri berilgan bir jinslimas sistemaning yechimi bo‘lmaydi ? |
| $Y=Y^*-Y_0$ . |
| $Y=Y^*+Y_0$ . |
| $Y= Y^*\cdot Y_0$ |
| $Y=Y^*\pm Y_0$ . |

№ 115 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-1;

| |
|---|
| Differensial tenglamalarning I tartibli chiziqli bir jinslimas normal sistemasining biror xususiy yechimi $Y^*$ matritsadan , unga mos keluvchi bir jinsli sistemaning umumiy yechimi $Y_0$ matritsadan iborat bo‘lsa, bir jinslimas sistemaning umumiy yechimi Y matritsa qanday ko‘rinishda bo‘ladi ? |
| $Y=Y^*/Y_0$ |
| $Y=Y_0-Y^*$ . |
| $Y=Y_0/Y^*$ . |
| $Y=Y^*+Y_0$ |

№ 116 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| | |
|---|---|
| Differensial tenglamalarning I tartibli bir jinsli | $\begin{cases} y_1' = -y_1 + 8y_2 \\ y_2' = y_1 + y_2 \end{cases}$ |

| |
|---|
| chiziqli normal sistemasining umumiy yechimini toping . |
| $y_1=C_1e^{3x}+C_2e^{-3x}$ , $y_2=2C_1e^{3x}-4C_2e^{-3x}$ . |
| $y_1=C_1e^{2x}+C_2xe^x$ , $y_2=C_1e^{2x}+C_2(x+1)e^x$ . |
| $y_1=C_1e^{3x}+C_2e^{2x}$ , $y_2=2C_1e^{3x}-3C_2e^{2x}$ . |

№ 117 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| Differensial tenglamalarning I tartibli bir jinsli $\begin{cases} y_1'=7y_1+3y_2 \\ y_2'=6y_1+4y_2 \end{cases}$ |
| chiziqli normal sistemasining fundamental yechimlar sistemasini toping . |
| $y_{11}=3e^x$, $y_{12}=-e^{10x}$ , $y_{21}=e^x$, $y_{22}=e^{10x}$ |
| $y_{11}=-3e^x$, $y_{12}=4e^{10x}$ , $y_{21}=2e^x$, $y_{22}=-e^{10x}$ . |
| $y_{11}=e^x$, $y_{12}=e^{10x}$ , $y_{21}=-2e^x$, $y_{22}=e^{10x}$ . |

№ 118 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-3;

| |
|---|
| Differensial tenglamalarning I tartibli bir jinsli $\begin{cases} y_1'=2y_1+4y_2 \\ y_2'=y_1+2y_2 \end{cases}$ |
| chiziqli normal sistemasi xarakteristik tenglamasining ildizlarini toping . |
| {0, 4} . |
| {2, 0} . |
| {4, 2} . |

№ 119 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-3;

| |
|---|
| Differensial tenglamalarning I tartibli bir jinsli $\begin{cases} y_1'=3y_1+2y_2 \\ y_2'=2y_1+3y_2 \end{cases}$ |
| chiziqli normal sistemasining xarakteristik tenglamasini toping . |
| .$\lambda^2+5\lambda-4=0$ |
| .$\lambda^2-6\lambda+5=0$ |
| $\lambda^2-5\lambda+6=0$ . |

№ 120 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-3;

| |
|---|
| Differensial tenglamalarning I tartibli bir jinsli $\begin{cases} y_1'=a_{11}y_1+a_{12}y_2 \\ y_2'=a_{21}y_1+a_{22}y_2 \end{cases}$ |
| chiziqli normal sistemasining xarakteristik tenglamasi qayerda to‘g‘ri yozilgan ? |
| |
| $\begin{vmatrix} a_{11}-\lambda & a_{12} \\ a_{21} & a_{22}-\lambda \end{vmatrix}=0$ . |
| $\begin{vmatrix} a_{11} & a_{12}-\lambda \\ a_{21}-\lambda & a_{22} \end{vmatrix}=0$ . |

№ 121 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-3;

| |
|---|
| ***Ta’rifni to‘ldiring:*** Differensial tenglamalarning I tartibli bir jinsli chiziqli normal sistemasining $y_1=y_1(x)$ va $y_2=y_2(x)$ yechimlari chiziqli erkli deyiladi, agar $\alpha_1 y_1+\alpha_2 y_2=0$ tenglik $\alpha_1$ va $\alpha_2$ koeffitsientlardan ...... nolga teng bo‘lganda bajarilsa . |
| .birortasi . |
| kamida bittasi . |
| faqat bittasi . |
| ikkalasi ham |

№ 122 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-3;

| |
|---|
| Differensial tenglamalarning I tartibli chiziqli normal sistemasi $$\begin{cases} y_1' = a_{11}y_1 + a_{12}y_2 + f_1(x) \\ y_2' = a_{21}y_1 + a_{22}y_2 + f_2(x) \end{cases}$$ qaysi holda bir jinslimas bo‘ladi ? |
| keltirilgan barcha hollarda sistema bir jinslimas bo‘ladi . |
| $f_1(x)$ va $f_2(x)$ funksiyalardan birinchisi aynan nolga teng emas . |
| $f_1(x)$ va $f_2(x)$ funksiyalardan ikkinchisi aynan nolga teng emas . |
| $f_1(x)$ va $f_2(x)$ funksiyalardan ikkalasi ham aynan nolga teng emas . |

№ 123 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| |
|---|
| ***Ta’rifni to‘ldiring:*** Differensial tenglamalarning I tartibli chiziqli normal sistemasi $$\begin{cases} y_1' = a_{11}y_1 + a_{12}y_2 + f_1(x) \\ y_2' = a_{21}y_1 + a_{22}y_2 + f_2(x) \end{cases}$$ bir jinsli deb ataladi , agar $f_1(x)$ va $f_2(x)$ funksiyalardan .... . |
| ikkalasi ham aynan nolga teng bo‘lsa . |
| kamida bittasi aynan nolga teng bo‘lsa . |
| faqat bittasi aynan nolga teng bo‘lsa . |
| birortasi aynan nolga teng bo‘lsa . |

№  124 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-3;

| |
|---|
| Quyidagilardan qaysi biri  I tartibli differentsal tenglamalar  sistemasining umumiy ko‘rinishini ifodalaydi ? |
| $\begin{cases} F_1(x, y_1, y_2, y_1', y_2', y_1'', y_2'') = 0 \\ F_2(x, y_1, y_2, y_1', y_2', y_1'', y_2'') = 0 \end{cases}$ |
| $\begin{cases} F_1(x, y_1, y_2, y_1', y_2') = 0 \\ F_2(x, y_1, y_2, y_1', y_2') = 0 \end{cases}$ |
| $\begin{cases} F_1(x, y_1, y_2, y_1', y_2') = 0 \\ \quad y_2' = f_2(x, y_1, y_2) \end{cases}$ |

| |
|---|
| $\begin{cases} y_1' = f_1(x, y_1, y_2) \\ F_2(x, y_1, y_2, y_1', y_2') = 0 \end{cases}$ |

№ 125 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-3;

| |
|---|
| $y''+py'+qy=B\cos\alpha x$ ($i\alpha$ soni $\lambda^2+p\lambda+q=0$ xarakteristik tenglamaning ildizi) differensial tenglamaning xususiy yechimi $y^*$ qanday ko‘rinishda izlanadi ? |
| $y^*=x(M\sin\alpha x+N\cos\alpha x)$ . |
| $y^*=N\cos\alpha x$ . |
| $y^*=Nx\cos\alpha x$ . |
| $y^*=M\sin\alpha x+N\cos\alpha x$ . |

№ 126 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| $y''+py'+qy=A\sin\alpha x$ ($i\alpha$ soni $\lambda^2+p\lambda+q=0$ xarakteristik tenglamaning ildizi emas) differensial tenglamaning xususiy yechimi $y^*$ qanday ko‘rinishda izlanadi ? |
| $y^*=x(M\sin\alpha x+N\cos\alpha x)$ |
| $y^*=M\sin\alpha x$ . |
| $y^*=Mx\sin\alpha x$ . |
| .$y^*=M\sin\alpha x+N\cos\alpha x$ . |

№ 127 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| $y''+py'+qy=A\sin\alpha x+B\cos\alpha x$ ($i\alpha$ soni $\lambda^2+p\lambda+q=0$ xarakteristik tenglamaning ildizi) differensial tenglamaning xususiy yechimi $y^*$ qanday ko‘rinishda izlanadi ? |
| $y^*=\sin M\alpha x+\cos M\alpha x$ |
| $y^*=x(M\sin\alpha x+N\cos\alpha x)$ . |
| $y^*=M\sin\alpha xN\cos\alpha x$ . |
| $y^*=M\sin\alpha x+N\cos\alpha x$ . |

№ 128 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| $y''+py'+qy=A\sin\alpha x+B\cos\alpha x$ ($i\alpha$ soni $\lambda^2+p\lambda+q=0$ xarakteristik tenglamaning ildizi emas) differensial tenglamaning xususiy yechimi $y^*$ qanday ko‘rinishda izlanadi ? |
| $y^*=M\sin\alpha xN\cos\alpha x$ . |
| $y^*=\sin M\alpha x+\cos M\alpha x$ . |
| $y^*=M\sin\alpha x+N\cos\alpha x$ . |
| $y^*=x(M\sin\alpha x+N\cos\alpha x)$ . |

№ 129 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| $y''-4y'-5y=xe^{-x}$ differensial tenglamaning $y^*$ xususiy yechimining ko‘rinishi qayerda to‘g‘ri ifodalangan ? |
| $y^*=x(Ax+B)e^{-x}$ . |
| $y^*=A+Bxe^{-x}$ . |
| $y^*=A+Bx^2e^{-x}$ . |
| $y^*=(Ax+B)e^{-x}$ . |

№ 130 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| |
|---|
| $y''+5y'+4y=xe^x$ differensial tenglamaning $y$* xususiy yechimining ko‘rinishi qayerda to‘g‘ri ifodalangan ? |
| .$y^*=A+Bxe^x$ . |
| $y^*=(Ax+B)e^x$ |
| $y^*=A+Bx^2e^x$ . |
| $y^*=x(Ax+B)e^x$ . |

№ 131 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| |
|---|
| Agar $y''+py'+qy=P_n(x)e^{\alpha x}$ ($P_n(x)$–$n$-darajali ko‘phadifferensial tenglamada $\alpha$ soni $\lambda^2+p\lambda+q=0$ xarakteristik tenglamaning karrali ildizi bo‘lsa va $Q_n(x)$ biror $n$-darajali ko‘phadni ifodalasa, unda differensial tenglamaning xususiy yechimi $y$* qanday ko‘rinishda izlanadi ? |
| $y^* = Q_n(x) + e^{\alpha x}$ |
| $y^* = Q_n(x)e^{\alpha x}$. |
| $y^* = xQ_n(x)e^{\alpha x}$. |
| $y^* = x^2Q_n(x)e^{\alpha x}$.. |

№ 132 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| |
|---|
| Agar $y''+py'+qy=P_n(x)e^{\alpha x}$ ($P_n(x)$–$n$-darajali ko‘phadifferensial tenglamada $\alpha$ soni $\lambda^2+p\lambda+q=0$ xarakteristik tenglamaning oddiy ildizlaridan biriga teng bo‘lsa va $Q_n(x)$ $n$-darajali ko‘phadni ifodalasa, unda differensial tenglamaning xususiy yechimi $y$* qanday ko‘rinishda izlanadi ? |
| $y^* = xQ_n(x)e^{\alpha x}$. |
| $y^* = Q_n(x) + e^{\alpha x}$. |
| $y^* = x^2Q_n(x)e^{\alpha x}$. |
| $y^* = Q_n^2(x)e^{\alpha x}$. |

№ 133 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-3;

| |
|---|
| Agar $y''+py'+qy=P_n(x)e^{\alpha x}$ ($P_n(x)$–$n$-darajali ko‘phadifferensial tenglamada $\alpha$ soni $\lambda^2+p\lambda+q=0$ xarakteristik tenglamaning ildizi bo‘lmasa va $Q_n(x)$ $n$-darajali ko‘phadni ifodalasa, unda differensial tenglamaning xususiy yechimi $y$* qanday ko‘rinishda izlanadi ? |
| $y^* = xQ_n(x)e^{\alpha x}$ |
| $y^* = Q_n(x)e^{\alpha x}$ |
| $y^* = Q_n(x) + e^{\alpha x}$. |
| $y^* = x^2Q_n(x)e^{\alpha x}$. |

№ 134 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-3;

| |
|---|
| O‘zgarmaslarni variatsiyalash usulida $y''–4y'+3y=x\sin 2x$ II tartibli chiziqli differensial tenglamaning xususiy yechimi $y^*$ qanday ko‘rinishda izlanadi ? |
| $y^*=C_1(x)e^x+C_2(x)e^{3x}$ . |
| $y^*=C_1(x)e^{2x}+C_2(x)e^{-2x}$ . |
| $y^*=C_1(x)e^x+C_2(x)e^{-2x}$ . |
| $y^*=C_1(x)\sin 2x+C_2(x)\cos 2x$ . |

№ 135 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-3;

| |
|---|
| II tartibli bir jinslimas chiziqli $y''+py'+qy=f(x)$ differensial tenglamaning $y^*$ xususiy yechimini o’zgarmaslarni variatsiyalash usulida $y^*=C_1(x)y_1+C_2(x)y_2$ ko’rinishda izlanganda (bunda $y_1$ va $y_2$ tegishli bir jinsli tenglamaning chiziqli erkli yechimlari) noma’lum $C_1(x)$ va $C_2(x)$ funksiyalar qaysi sistemadan topiladi? |
| $\begin{cases} C_1'(x)y_1+C_2'(x)y_2=0 \\ C_1'(x)y_1'+C_2'(x)y_2'=f(x) \end{cases}$ |
| $\begin{cases} C_1'(x)y_1+C_2'(x)y_2=f(x) \\ C_1'(x)y_1'+C_2'(x)y_2'=0 \end{cases}$ |
| $\begin{cases} C_1(x)y_1+C_2(x)y_2=0 \\ C_1(x)y_1'+C_2(x)y_2'=f(x) \end{cases}$ |
| $\begin{cases} C_1(x)y_1+C_2(x)y_2=f(x) \\ C_1(x)y_1'+C_2(x)y_2'=0 \end{cases}$ |

№ 136 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-3;

| |
|---|
| Agar II tartibli bir jinslimas chiziqli $y''+py'+qy=f(x)$ differensial tenglama mos keluvchi bir jinsli tenglamaning chiziqli erkli yechimlari $y_1$ va $y_2$ bo‘lsa, o‘zgarmaslarni variatsiyalash usulida bir jinlimas tenglamaning xususiy yechimi $y^*$ qanday ko‘rinishda izlanadi ? |
| $y^*=[C_1(x)–C_2(x)](y_1–y_2)$ |
| $y^*=C_1(x)y_1/C_2(x)y_2$ . |
| $y^*=[C_1(x)+C_2(x)](y_1+y_2)$ . |
| .$y^*=C_1(x)y_1+C_2(x)y_2$ . |

№ 137 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-3;

| |
|---|
| II tartibli bir jinslimas chiziqli $y''+py'+qy=f(x)$ differensial tenglamaning xususiy yechimi $y^*$, unga mos keluvchi bit jinsli tenglamaning umumiy yechimi $y^0$ bo‘lsa, birjinslimas tenglamaninh umumiy yechimi $y$ qanday ko‘rinishda bo‘ladi ? |
| $y=y^*+y^0$ . |
| $y=y^*/y^0$ . |
| $y=y^*\cdot y^0$ . |

| |
|---|
| $y=y^0/\ y^*$ . |

№ 138 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| |
|---|
| Quyidagi II tartibli chiziqli tenglamalardan qaysi biri bir jinslimas bo’ladi? |
| $y''+py'+qy=0$ |
| .$y''+py'+q=0$ . |
| $y''+py'=0$ . |
| $y''+qy=0$ . |

№ 139 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-3;

| |
|---|
| II tartibli chiziqli $y''+py'+qy=(\alpha^2-1)f(x)$ differensial tenglama $\alpha$ parametrning qanday qiymatlarida  birjinslimas bo‘lmaydi ? |
| $\alpha=\pm1$ . |
| $\alpha>0$ . |
| $\alpha\neq0$ . |
| $\alpha<0$ . |

№ 140 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-3;

| |
|---|
| II tartibli chiziqli $y''+py'+qy=(\alpha^2-1)f(x)$ differensial tenglama $\alpha$ parametrning qanday qiymatlarida  birjinslimas bo‘ladi ? |
| $\alpha\neq0$ . |
| $\alpha>0$ . |
| $\alpha\neq\pm1$ |
| $\alpha<0$ . |

№ 141 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| |
|---|
| II tartibli chiziqli $y''+py'+qy=f(x)$ differensial tenglama qaysi holda birjinslimas bo‘lmaydi ? |
| $f(x)=0$ . |
| $f(x)\neq0$ . |
| $f(x)>0$ . |
| $f(x)<0$ . |

№ 142 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-3;

| |
|---|
| II tartibli chiziqli $y''+py'+qy=f(x)$ differensial tenglama qaysi shartda bir jinslimas deb ataladi ? |
| $f(x)>0$ |
| .$f(x)\neq0$ . |
| $f(x)<0$ . |
| $f(x)\geq0$ . |

№ 143 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| |
|---|
| $y_1$ va $y_2$ chiziqli bog'liq funksiyalar bo'lsa, ularning Vronskiy aniqlovchisi W($y_1$,$y_2$) qaysi shartni qanoatlantiradi ? |
| W($y_1$,$y_2$)=0 . |
| W($y_1$,$y_2$)>0 . |
| W($y_1$,$y_2$)<0 . |
| W($y_1$,$y_2$)≠0 . |

№ 144 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| Agar $y_1$ va $y_2$ funksiyalar $y''+a_1y'+a_2y=0$ differensial tenglamaning xususiy yechimlari bo‘lsa, ularining Vronskiy aniqlovchisi W($y_1$,$y_2$) qaysi shartni qanoatlantirganda bu yechimlar chiziqli bog‘liq bo‘ladi ? |
| W($y_1$,$y_2$)<0 |
| W($y_1$,$y_2$)>0 . |
| W($y_1$,$y_2$)=0 |
| W($y_1$,$y_2$)≠0 . |

№ 145 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-3;

| |
|---|
| $y_1$ va $y_2$ funksiyalar quyidagi shartlardan qaysi birini qanoatlantirganda ularning Vronskiy aniqlovchisi W($y_1$,$y_2$)=0 bo'ladi? |
| $y_1/y_2$=*const.* |
| $y_1+y_2$=*const.* . |
| $y_1-y_2$=*const.* . |
| $y_1y_2$=*const.* . |

№ 146 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-3;

| |
|---|
| $y_1=\sin^2 x$ va $y_2=1-\cos 2x$ funksiyalarning Vronskiy aniqlovchisi W($y_1$,$y_2$) qayerda to'gri ifodalangan? |
| W($y_1$,$y_2$)=cos2$x$ |
| W($y_1$,$y_2$)=sin2$x$ . |
| W($y_1$,$y_2$)=0 |
| W($y_1$,$y_2$)=1 . |

№ 147 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-3;

| |
|---|
| $y_1=\cos^2 x$ va $y_2=1+\cos 2x$ funksiyalarning Vronskiy aniqlovchisi W($y_1$,$y_2$) qayerda to'gri ifodalangan? |
| W($y_1$,$y_2$)=0 . |
| W($y_1$,$y_2$)=sin2$x$ . |
| W($y_1$,$y_2$)=cos2$x$ . |
| W($y_1$,$y_2$)=1 . |

№ 148 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| Agar $y_1$ va $y_2$ funksiyalar $y''+a_1y'+a_2y=0$ differensial tenglamaning yechimlari bo‘lsa, ularning Vronskiy aniqlochisi W($y_1$,$y_2$) uchun Liuvill formulasi qanday ko‘rinishda bo‘ladi ? |
| $W(y_1,y_2)=Ce^{-a_1x}$ . |
| $W(y_1,y_2)=Ce^{-a_2x}$ . |
| $W(y_1,y_2)=a_1e^{-x}$ . |
| $W(y_1,y_2)=a_2e^{-x}$ . |

№ 149 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| Agar $y_1$ va $y_2$ berilgan $y''+a_1y'+a_2y=0$ differensial tenglamaning chiziqli erkli yechimlari, $C_1$ va $C_2$ ixtiyoriy o‘zgarmas sonlar bo‘lsa, bu differensial tenglmaning umumiy yechimi $y$ qanday ko‘rinishda bo‘ladi ? |
| $y= C_1y_1\cdot C_2y_2$ |
| $y= (C_1+y_1)(C_2+y_2)$ . |
| .$y= C_1y_1+ C_2y_2$ . |
| $y= C_1y_1/ C_2y_2$ . |

№ 150 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| $a_0y''+a_1y'+a_2y=0$ bir jinsli differensial tenglamaning xususiy yechimi $y$ qaysi ko‘rinishda izlanadi ? |
| $y=e^{\lambda x}$ . |
| $y=x^{\lambda}$ . |
| $y=\sin\lambda x$ . |
| $y=\cos\lambda x$ . |

№ 151 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| $a_0y''+a_1y'+a_2y=0$ differensial tenglamaning xarakteristik tenglamasini ko‘rsating . |
| $a_0\lambda^2+a_1\lambda+a_2=0$ . |
| $a_0+a_1\lambda+a_2\lambda^2=0$ . |
| $a_0+a_1\lambda^2+a_2\lambda=0$ . |
| $a_0\lambda+a_1\lambda^2+a_2=0$ . |

№ 152 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-3;

| |
|---|
| $a_0y''+a_1y'+a_2y=0$ differensial tenglamaning $y_1$ va $y_2$ xususiy yechimlarining Vronskiy aniqlovchisi W($y_1$, $y_2$) qaysi shartni qanoatlantirganda ular fundamental yechim bo‘lmaydi ? |
| .W($y_1$, $y_2$)$\neq$0 |

| |
|---|
| W($y_1$, $y_2$)>0 . |
| W($y_1$, $y_2$)<0 . |
| .W($y_1$, $y_2$)=0 |

№ 153 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-3;

| |
|---|
| $a_0 y'' + a_1 y' + a_2 y = 0$ differensial tenglamaning xarakteristik tenglamasi ildizlari $\lambda_1$ , $\lambda_2$ haqiqiy va $\lambda_1 \neq \lambda_2$ bo‘lsa, uning $y_1$ va $y_2$ fundamental yechimlari qayerda to‘g‘ri ko‘rsatilgan ? |
| $y_1 = e^{\lambda_1 x}$ , $y_2 = e^{\lambda_2 x}$ . |
| $y_1$=cos$\lambda_1 x$ , $y_2$=cos$\lambda_2 x$ . |
| $y_1$=sin$\lambda_1 x$ , $y_2$=sin$\lambda_2 x$ . |
| $y_1 = e^{\lambda_1 x} \cos \lambda_1 x$ , $y_2 = e^{\lambda_2 x} \cos \lambda_2 x$ . |

№ 154 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| |
|---|
| $a_0 y'' + a_1 y' + a_2 y = 0$ differensial tenglamaning xarakteristik tenglamasi ildizlari $\lambda_1$ , $\lambda_2$ haqiqiy va $\lambda_1 = \lambda_2 = \lambda_0$ bo‘lsa, uning $y_1$ va $y_2$ fundamental yechimlari qayerda to‘g‘ri ko‘rsatilgan ? |
| $y_1 = e^{\lambda_0 x}$ , $y_2 = e^{\lambda_0 x} / x$ |
| $y_1 = e^{\lambda_0 x}$ , $y_2 = x e^{\lambda_0 x}$ . |
| $y_1 = e^{\lambda_0 x}$ , $y_2 = x + e^{\lambda_0 x}$ . |
| $y_1 = e^{\lambda_0 x} \cos \lambda_0 x$ , $y_2 = e^{\lambda_0 x} \sin \lambda_0 x$ . |

№ 155 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| |
|---|
| $a_0 y'' + a_1 y' + a_2 y = 0$ differensial tenglamaning xarakteristik tenglamasi ildizlari kompleks va $\lambda_{1,2} = \alpha \pm i\beta$ bo‘lsa, uning $y_1$ va $y_2$ fundamental yechimlari qayerda to‘g‘ri ko‘rsatilgan ? |
| $y_1 = e^{\alpha x} \sin \beta x$ , $y_2 = e^{\alpha x} \cos \beta x$ . |
| $y_1 = e^{\beta x} \cos \alpha x$ , $y_2 = e^{\beta x} \sin \alpha x$ . |
| $y_1 = e^{\beta x} \cos \beta x$ , $y_2 = e^{\alpha x} \sin \alpha x$ . |
| $y_1 = e^{\beta x} \sin \alpha x$ , $y_2 = e^{\alpha x} \cos \beta x$ . |

№ 156 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| |
|---|
| $y'' - y' - 2y = 0$ tenglamaning umumiy yechimini toping . |
| $y = C_1 e^{5x} + C_2 e^{3x}$ |
| $y = C_1 e^{x} + C_2 e^{-x}$ . |
| $y = C_1 e^{2x} + C_2 e^{-x}$ . |
| $y = (C_1 \cos x + C_2 \sin x) e^{-x}$ . |

№ 157 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| |
|---|
| $y'' + 3y' + 2y = 0$, $y(0)=0$, $y'(0)=1$ Koshi masalasi yechimini toping . |
| $y = e^{-x} - e^{-2x}$. |
| $y = 3\sin x - \sin 2x$ . |
| $y = (e^{x} - e^{-x})/2$ . |
| $y = \cos 2x - 2\cos x$; |

№ 158 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| |
|---|
| $y'' - 4y' + 4y = 0$ tenglamaning umumiy yechimini toping . |
| $y = (C_1 x + C_2)e^{2x}$. |
| $y = C_1 + C_2 e^{2x}$. |
| $y = (C_1 x + C_2)e^{-2x}$. |
| $y = C_1 \cos 2x + C_2 \sin 2x$. |

№ 159 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-3;

| |
|---|
| $y'' - 4y' + 4y = 0$, $y\big\|_{x=0} = 1$, $y'\big\|_{x=0} = 5$ Koshi masalasining yechimini toping . |
| $y = 4e^{2x} - 3$ |
| $y = (3x+1)e^{2x}$ |
| $y = (7x+1)e^{-2x}$. |
| $y = \cos 2x + 4\sin 2x$. |

№ 160 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-3;

| |
|---|
| $y'' + 4y' + 5y = 0$ tenglamaning umumiy yechimini toping . |
| $y = (C_1 \sin x + C_2 \cos x)e^{-2x}$. |
| $y = C_1 + C_2 e^{2x}$. |
| $y = (C_1 x + C_2)e^{2x}$. |
| $y = (C_1 x + C_2)e^{-2x}$. |

№ 161 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-3;

| |
|---|
| $y'' + 4y' + 5y = 0,\ y(0) = 4,\ y'(0) = 2$ Koshi masalasining yechimini toping . |
| $y = (10\sin x + 4\cos x)e^{-2x}$. |
| $y = (10x + 4)e^{-2x}$ |

| |
|---|
| $y=(4-6x)e^{2x}$. |
| $y=3+e^{2x}$ |

№ 162 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-3;

| |
|---|
| $y''+4y'+5y=0,\ y(0)=4,\ y'(0)=2$ Koshi masalasi yechimining $x=\pi/2$ nuqtadagi qiymati nimaga teng ? |
| $y(\pi/2)=10e^{-\pi}$. |
| $y(\pi/2)=3+e^{\pi}$. |
| $y(\pi/2)=(4-3\pi)e^{\pi}$. |
| $y(\pi/2)=-4e^{-\pi}$. |

№ 163 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| Quyidagi funksiyalardan qaysi biri $y'''-6=0$ differensial tenglamaning yechimi bo’ladi? |
| $y=x^3$ |
| $y=x^2$ |
| $y=x$ |
| $y=x^4$ |

№ 164 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| Quyidagi funksiyalardan qaysi biri $y'-2y=0$ differensial tenglamaning yechimi bo’ladi? |
| $y=e^{2x}$ |
| $y=\ln 2x$ |
| $y=\cos 2x$ |
| $y=\sin 2x$ |

№ 165 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| Differensial tenglamaning tartibini toping. $y''-y'\cos x-x^2y=0$ |
| I |
| II |
| III |
| IV |

№ 166 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| $y=e^{Cx}$ yechim quyidagi keltirilgan differensial tenglamaning yechimi bo’ladi. |
| $y=e^{\frac{xy'}{y}}$ |

| |
|---|
| $y'' = 0$ |
| $y'' + y = 0$ |
| $y' = \cos x$ |

№167 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| $y = \sin(x + C)$ yechim quyidagi keltirilgan differensial tenglamaning yechimi bo’ladi. |
|---|
| $y' = y^2$ |
| $y' = y$ |
| $y^2 + y'^2 = 1$ |
| $y' = \cos x(x + C)$ |

№ 168 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-3;

| Differensial tenglamani yeching: $2x^2 yy' + y^2 = 2$ |
|---|
| $y = \sqrt{2 - ce^{\frac{1}{x}}}$ |
| $y = ce^x$ |
| $y = 2 - ce^x$ |
| $y = ce^{\frac{1}{x}}$ |

№ 169 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-3;

| Differensial tenglamani yeching: $xy' + y = y^2$ |
|---|
| $y = cy - x$ |
| $y = cx - 2$ |
| $y = cxy + 1$ |
| $y = c(x - y)$ |

№ 170 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-3;

| Differensial tenglamani yeching: $y' - xy^2 = 2xy$ |
|---|
| $\left\|\frac{y}{y+2}\right\| = ce^{x^2}$ |
| $y = cxy + 2$ |
| $y = cx^2 - 2$ |
| $y = \sin(x + C)$ |

№ 171 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-3;

| Differensial tenglamani yeching: $y' = 3\sqrt[3]{y^2}$ |
|---|

| |
|---|
| $y=\cos(2x+C)$ |
| $y=cx^2-3x$ |
| $cx=y^2$ |
| $y=(x+c)^3, y=0$ |

№ 172 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-3;

| |
|---|
| $\begin{cases}\dot{x}=y+2x\\ \dot{y}=3x+4y\end{cases}$ differensial tenglamalar sistemasini yeching. |
| $x=c_1e^t+c_2e^{5t}$<br>$y=-c_1e^t+3c_2e^{5t}$ |
| $x=c_1e^{-t}+c_2e^{5t}$<br>$y=-c_1e^{-t}+3c_2e^{-5t}$ |
| $x=c_1e^t+c_2e^{5t}$<br>$y=c_1e^t+3c_2e^{5t}$ |
| $x=c_1e^t+2c_2e^{5t}$<br>$y=-c_1e^t+3c_2e^{5t}$ |

№ 173 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-3;

| |
|---|
| $\begin{cases}y'=\dfrac{x}{z}\\ z'=-\dfrac{x}{z}\end{cases}$ differensial tenglamalar sistemasini yeching. |
| $y=c_2e^{c_1x^2},\ z=\dfrac{1}{2c_1c_2}e^{-c_1x^2}$ |
| $y=c_2e^{c_1x},\ z=\dfrac{1}{2c_1c_2}e^{-c_1x^2}$ |
| $y=c_1c_2e^{x^2},\ z=\dfrac{1}{2c_1c_2}e^{-c_1x^2}$ |
| $y=c_2e^{x^2},\ z=\dfrac{1}{2c_1c_2}e^{c_1x^2}$ |

№ 174 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| |
|---|
| $x=e^t, y=-e^t$ funksiyalar quyidagi keltirilgan qaysi sitemaning yechimi bo’ladi. |
| $\dot{x}=x+y$<br>$\dot{y}=3y-2x$ |

| |
|---|
| $\dot{x} = 2x + y$<br>$\dot{y} = 3x + 4y$ |
| $\dot{x} = x - y$<br>$\dot{y} = y - 4x$ |
| $\dot{x} = x - 3y$<br>$\dot{y} = 3x + y$ |

№175 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| Agar $W\left[e^{x}, e^{-x}\right]$ Vronskian berilsa, W(0) ni hisoblang. |
| -2 |
| 1 |
| -1 |
| 0 |

№ 176 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| Агар $W[1, tgx]$ Vronskian berilsa, W(0) ni hisoblang. |
| -1 |
| 1 |
| 0 |
| 2 |

№ 177 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| $\sin x, \cos x$ funksiyalarning Vronskianini toping. |
| -1 |
| 1 |
| 0 |
| cos2x |

№ 178 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| Agar $F(x,y',y'')=0$ tenglamani qanday belgilash kiritish orqali ishlanadi. |
| $y''=p(x)$ |
| $y'=p(y)$ |
| $y'=p(x)$ |
| $y''=p(y)$ |

№ 179 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| Agar $F(y,y',y'')=0$ tenglamani qanday belgilash kiritish orqali ishlanadi. |
| $y'=p(y)$ |
| $y'=p(x)$ |
| $y''=p(x)$ |

| |
|---|
| $y''$=p(y) |

№ 180 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| Quyidagi xarakteristik tenglamalarning qaysi birini yechimlar 2 va 3 ga teng |
| $y''+y=0$ |
| $y''+y'+y=0$ |
| $y''-5y'+6y=0$ |
| $y'''=0$ |

№ 181 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| Quyidagi xarakteristik tenglamalarning qaysi birini yechimlar 1 va -2 ga teng |
| $y'''=0$ |
| $y''+2y'+y=0$ |
| $y''+2y=0$ |
| $y''+y'-2y=0$ |

№ 182 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-3;

| |
|---|
| $y''+3y'+2y=6$ tenglamaning maxsus yechimini toping. |
| 3 |
| 0 |
| $x$ |
| $x^2$ |

№ 183 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-3;

| |
|---|
| $y''+y'=0$ tenglamaning maxsus yechimini toping. |
| $e^{-x}$ |
| $x$ |
| $x^2$ |
| $e^x$ |

№ 184 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-3;

| |
|---|
| $y''+3y'+2y=0$ xarakteristik tenglamaning sonlarini toping. |
| 2.1 |
| -2, -1 |
| -2 |
| -1 |

№ 185 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-3;

| |
|---|
| $y'' + 4y = 0$ differensial tenglamaning umumiy yechimini yeching. |
| $y = c_1 \cos 2x + c_2 \sin 2x$ |
| $y = c_1 e^{2x} + c_2 e^{-2x}$ |
| $y = ce^{-4x}$ |
| $y = c_1 \cos 2x + c_2 x \cos 2x$ |

№ 186 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-3;

| |
|---|
| $y'' + 16y = 0$ differensial tenglamaning umumiy yechimini yeching. |
| $y = c_1 e^{4x} + c_2 e^{-4x}$ |
| $y = ce^{-16x}$ |
| $y = c_1 \cos 4x + c_2 \sin 4x$ |
| $y = c_1 e^{-4x} \cos 4x + c_2 e^{-4x} \sin 4x$ |

№ 187 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-3;

| |
|---|
| $x^3 y''' + xy' - y = 0$ Eyler tenglamasini yeching. |
| $y = x\left(c_1 + c_2 \ln\lvert x\rvert + c_3 \ln^2\lvert x\rvert\right)$ |
| $y = c_1 + c_2 \ln\lvert x\rvert + c_3 \ln^2\lvert x\rvert$ |
| $y = x^2\left(c_1 + c_2 \ln\lvert x\rvert + c_3 \ln^2\lvert x\rvert\right)$ |
| $y = c_1 + c_2 x + c_3 x^2$ |

№ 188 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| Berilgan funksiyalarni chiziqli erklilikka tekshiring. |
| $6x + 9,\ 8x + 12$ |
| $x + 2, x - 2$ |
| $Sinx,\ Cosx$ |
| $x^2 + 2x,\ 3x^2 - 1, x + 4$ |

№ 189 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| $y' + y = 7$ *differensial tenglamaning maxsus yechimini toping.* |
| *0* |
| *7x* |
| $e^x$ |
| *7* |

№190 Fan bo‘limi- Differensial tenglamalar; Qiyinlik darajasi-3;

| |
|---|
| $y' \cdot \mathrm{e}^{x^2} = x \cdot e^{x^2} - y$ tenglamaning turini aniqlang. |
| Chiziqli bir jinslimas differensial tenglama |

| |
|---|
| Bernulli tenglamasi |
| Klero tenglamasi |
| O'zgaruvchilari ajraladigan differensial tenglama |

№ 191 Fan bo'limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| $x' + g(t)x = f(t)x^k$ tenglamaning turini aniqlang. |
| Chiziqli tenglama |
| Bernulli tenglamasi |
| Klero tenglamasi |
| O'zgaruvchilari ajraladigan differensial tenglama |

№192 Fan bo'limi- Differensial tenglamalar; Qiyinlik darajasi-2;

| |
|---|
| $x' = \frac{x}{y}$ tenglamaning turini aniqlang. |
| O'zgaruvchilari ajraladigan |
| Bernulli tenglamasi |
| Chiziqli tenglama |
| Bir jinsli tenglama |

№ 193 Fan bo'limi- Differensial tenglamalar; Qiyinlik darajasi-3;

| |
|---|
| Ushbu $y' = \frac{y}{3x - y^2}$ tenglamani yeching. |
| $x = cy^3 + y^2$ |
| $y = 3x^3 + cx^2$ |
| $y = cx^3 + x^2$ |
| $y = cx + x^2$ |

№ 194 Fan bo'limi- Differensial tenglamalar; Qiyinlik darajasi-3;

| |
|---|
| tenglamaning turini aniqlang. $xy' = y - xe^{\frac{y}{x}}$ |
| Chiziqli tenglama |
| Bernulli tenglamasi |
| Bir jinsli tenglama |
| To'la differensial tenglama |

№ 195 Fan bo'limi- Differensial tenglamalar; Qiyinlik darajasi-3;

| |
|---|
| Tenglamani yeching. $y' = xy - y^3,\ y(0) = 0$ |
| 1 |
| 2 |
| 3 |
| 9 |

№ 196 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| |
|---|
| Tenglamaning turini aniqlang. $\left(x\cos y-y^2\right)dy+\left(\sin y+x\right)dx=0$ |
| To’la differensial tenglama |
| Bernulli tenglamasi |
| Chiziqli tenglama |
| Bir jinsli  tenglama |

№ 197 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-;

| |
|---|
| $y^{/}+P(x)y=Q(x)$ tenglamaga mos bir jinsli tenglamani yechimi qanday ko’rinishda bo’ladi. |
| $\int p(x)dx$ |
| $e^{-\int p(x)dx}$ |
| $e^{\int p(x)dx}$ |
| $e^{\int p^2(x)dx}$ |

№ 198 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-2;

| |
|---|
| $y=x+y'^3$ tenglamaning maxsus yechimini toping. |
| $y=x+1$ |
| $y=x+3$ |
| $y=x+2$ |
| $y=x+4$ |

№ 199 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-3;

| |
|---|
| $(x^2-y)dx+(x^2y^2+x)dy=0$ integrallovchi ko’paytuvchini toping. |
| $\mu(x)=\frac{1}{x^2}$ |
| $\mu(x)=x^2$ |
| $\mu(x)=\frac{1}{x^3}$ |
| $\mu(x)=x^3$ |

№ 200 Fan bo‘limi- Differensial tenglamalar;  Qiyinlik darajasi-3;

| |
|---|
| $y'=\frac{y+\sqrt{x^2-y^2}}{x}$ tenglamani yeching. |

| |
|---|
| $y = x\ln(\cos cx)$ |
| $y = x\ln(\sin cx)$ |
| $y = x\sin(\ln cx)$ |
| $y = xtg(\ln cx)$ |

$f(x,y)$ funksiya qachon $k$ tartibli bir jinsli funksiya deyiladi?

======

#$f(\lambda x, \lambda y) = \lambda^k f(x,y)$

======

$f(\lambda x, \lambda y) = \lambda f(x,y)$

======

$f(\lambda x, \lambda y) = k^\lambda f(x,y)$

======

$f(\lambda x, \lambda y) = (\lambda k) f(x,y)$

y'-y/x=x+1 tenglamaning turini aniqlang

======

o'zgaruvchilari ajraladigan

======

#chiziqli

======

bir jinsli

======

Bernulli

Erkli o‘zgaruvchi, noma’lum funksiya va uning hosilalari yoki differensiallarini bog‘lovchi tenglamaga ... deyiladi.

======

#differensial tenglama

======

umumiy yechim

======

xususiy yechim

======

Tartibi

---

Differensial tenglamani xususiy yechimini toping

$$3y' + y = 0 \quad y(0) = 2$$

======

# $y = 2e^{-\frac{x}{3}}$

======

$y = 2 + x^3$

======

$y = 2e^{-3x}$

======

$y = 2e^{\frac{x}{3}}$

Differensial tenglamani xususiy yechimini toping.

$y' = 4\sqrt{y} \quad y(0) = 9$

======

# $y = (2x+3)^2$

======

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

======

$y = 2x + 9$

======

$y = \frac{1}{9}(2x+9)^2$

Differensial tenglamani xususiy yechimini toping.

$e^y y' + 1 = 0 , \quad y(0) = \ln 2$

======

# $y = \ln(2-x)$

======

$y = \ln(2+x)$

======

$$y = \frac{1}{2}\ln(4 - x)$$

(x-2y+3)dy+(2x+y-1)dx=0 tenglamaning turini aniqlang

======

#bir jinsliga keladigan

======

bir jinsli

======

chiziqli

======

Bernulli

$y'' + 16y = 0$ tenglamaning umumiy yechimini toping

======

# $y = c_1 \cos 4x + c_2 \sin 4x$

======

$y = ce^{-16x}$

======

$y = c_1 e^{4x} + c_2 e^{-4x}$

======

$y = c_1 e^{-4x} \cos 4x + c_2 e^{-4x} \sin 4x$

2(x+y)dy+(3x+3y-1)dx=0 tenglamaning turini aniqlang

======

#bir jinsliga keladigan

======

bir jinsli

======

chiziqli

======

Bernulli

Chiziqli tenglamani yechish uchun qanday almashtirish bajariladi

======

#y=uv

======

y=ux

======

y=x+u

======

y=x+v

$\left(2x+3x^2\right)dx+2ydy=0$ tenglamaning umumiy yechimini toping

======

# $x^2+x^3+y^2=c$

======

$x^2y+y^3=c$

======

$x^2y+x^3=c$

======

$$\frac{x}{y} + x^3 = c$$

Ushbu $y = cx^2$ chiziqlar sinfining differensial tenglamasini toping

======

# $xy' = 2y$

======

$$y' = y^{\frac{2}{x}}$$

======

$$y'x = 3y$$

======

$$y'x^2 = y^2$$

y = z(x, $C_0$) ko‘rinishdagi funksiya differensial tenglamaning ... yechimi deyiladi

======

#xususiy

======

umumiy

======

xos

======

xosmas

$$F\left(x, y, y', y'', \ldots, y^{(n)}\right) = 0$$

tenglama $x, y, y', y'', \ldots, y^{(n)}$ larga nisbatan bir jinsli bo‘lsa, qanday almashtirish bajariladi.

======

# $\frac{y'}{y} = p(x)$

======

**y=p(x)**

======

$y_1 = \frac{\sin x}{x}$

======

$y=x$

$y''' + 3y' = x$, $y(0)=1,\ y'(0)=3\ \ y''(0)=2$ Ushbu , masala, qanday masala deyiladi.

======

#Koshi masalasi

======

Chegaraviy masala

======

Variasion masala

======

Gursa masalasi

$y'' - 16y = 0$ tenglamaning umumiy yechimini toping.

======

# $y = c_1 e^{4x} + c_2 e^{-4x}$

======

$y = c_1 \cos 4x + c_2 \sin 4x$

======

$y = ce^{-16x}$

======

$y = c_1 e^{-4x} \cos 4x + c_2 e^{-4x} \sin 4x$

........... tenglamasi o‘zgaruvchi koeffisientli chiziqli tenglamadir.

======

#Eyler

======

Klero

======

Jordan

======

Kopernik

$2y - xy' = 0$ tenglamaning umumiy yechimini toping.

======

# $y = cx^2$

======

$y^3 = cx + x^2$

======

$xy + y^3 = c$

======

$y = 0$

$y' = \frac{y}{x}$ tenglamani yechimini aniqlang

======

# $y = cx$

======

$y = c + x$

======

$y = c_1 e^{2x} + c_2 e^{-2x}$

======

$y = ce^{-4x}$

$y' = \frac{y}{x}$ tenglamani yechimini aniqlang

======

# $y = cx$

======

$y = c + x$

======

$$y = c_1 e^{2x} + c_2 e^{-2x}$$

======

$$y = ce^{-4x}$$

y'=y/x(ln(y/x)+1) tenglamaning turini aniqlang

======

#bir jinsli

======

Klero

======

chiziqli

======

Bernulli

y'cosx=(y+1)sinx tenglamaning turini aniqlang

======

#o'zgaruvchilari ajraladigan

======

chiziqli

======

bir jinsli

======

Bernulli

Chiziqli tenglama … usuli yordamida yechiladi

======

#Bernulli

======

Nyuton

======

Kramer

======

Gauss

y'lny=y tenglamaning turini aniqlang

======

#o'zgaruvchilari ajraladigan

======

chiziqli

======

bir jinsli

======

Bernulli

$dy = \sin(2x+3y)dx$ tenglama qanday almashtirish yordamida o‘zgaruvchilari ajralgan tenglamaga keladi?

======

# $z = 2x + 3y$

======

$y = zx^n$

======

$y = zx$

======

$y = 3e^{2x}$

$y' = \dfrac{y}{x \ln x}$ tenglamani yechimini aniqlang.

======

# $y = c \ln x$

======

$y = c + \ln x$

======

$y = c \ln x + x$

======

$y'' - 2y' = 0$ tenglamaning umumiy yechimini toping.

======

# $y = c_1 + c_2 e^{2x}$

======

$y = c_1 e^{2x} + c_2 e^{-2x}$

======

$y = c e^{-2x}$

======

$y = c_1 \cos 2x + c_2$

$y' = f\left(\frac{x-y+1}{2x-2y-3}\right)$ tenglama qanday almashtirish yordamida o‘zgaruvchilari ajralgan tenglamaga keladi?

======

# $z = x - y$

======

$z = yx^2$

======

$z = yx$

======

$z = ye^{\alpha x}$

$y'' - 5y' + 6y = 0$ tenglamaning umumiy yechimi topilsin

======

# $y = c_1 e^{2x} + c_2 e^{3x}$

======

$y = c_1 e^{2x} + c_2 e^{-3x}$

======

$y = c_1 e^{-2x} + c_2 e^{3x}$

======

$y = c_1 e^{-2x} + c_2 e^{-3x}$

Differensial tenglama deb,............... aytiladi?

======

#erkli o'zgaruvchi, noma'lum funksiya va uning hosilalari orasidagi bog'lanishli tenglamaga aytiladi

======

erkli o'zgaruvchi, noma'lum funksiya va uning boshlang'ich tenglamaga aytiladi

======

noma'lum funksiya va uning boshlang'ich tenglamaga aytiladi

======

boshlang'ich shartli

Differensial tenglamada ko‘p argumentli hol bo‘lsa,......... deyiladi

======

#Hususiy hosilali differensial tenglama

======

Ko'p hosilali differensial tenglama

======

Karrali hosilali differensial tenglama

======

Yopiq differensial tenglama

$y' = \frac{3x - y}{2x + y}$ tenglama qanday almashtirish yordamida o‘zgaruvchilari ajralgan tenglamaga keladi?

======

# $z = \frac{y}{x}$

======

$y = zx^n$

======

$y' = zy$

======

$y = \frac{z}{x}$

$y''' - 2y'' = 0$ tenglamaning umumiy yechimini toping

======

#$y = c_1 + c_2 x + c_3 e^{2x}$

======

$y = ce^{2x}$

======

$y = c_1 e^{2x} + c_2 e^{-2x}$

======

$y = ce^{-6x} \sin 6x$

Agar differensial tengama bir o‘zgaruvchili bo‘lsa, u holda u ... differensial tenglama deyiladi

======

#oddiy

======

xarakteristik

======

umumiy

======

xususiy hosilali

Agar differensial tengama ikki va undan ortiq o‘zgaruvchili bo‘lsa, u holda u ... differensial tenglama deyiladi

======

#xususiy hosilali

======

oddiy

======

umumiy

======

xarakteristik

To‘la differensial tenglama bo‘lish sharti …

======

\# $\frac{\partial P}{\partial y} = \frac{\partial Q}{\partial x}$

======

$u = \int P(x, y)dx + C(y)$

======

$\frac{\partial u}{\partial y} = P$

======

y=tx

Differensial tenglama tarkibiga kiruvchi eng yuqori hosila tartibi differensial tenglamaning ... deyiladi

======

#tartibi

======

yechimi

======

sharti

======

funksiyasi

$y'+\sin(x+y)=\sin(x-y)$ tenglamaning turini aniqlang

======

#o'zgaruvchilari ajraladigan

======

chiziqli

======

bir jinsli

======

Bernulli

$xy'+y=0$ tenglamaning turini aniqlang

======

#o'zgaruvchilari ajraladigan

======

chiziqli

======

bir jinsli

======

Bernulli

$y'+y=0$ tenglamaning turini aniqlang

======

#o'zgaruvchilari ajraladigan

======

chiziqli

======

bir jinsli

======

Bernulli

(x-2y+3)dy+(2x+y-1)dx=0 tenglamaning turini aniqlang

======

#bir jinsliga keladigan

======

bir jinsli

======

chiziqli

======

Bernulli

$y'=y^{2/3}$ tenglamaning turini aniqlang

======

#o'zgaruvchilari ajraladigan

======

chiziqli

======

bir jinsli

======

Bernulli

$y'=x(y^2+1)$ tenglamaning turini aniqlang

======

#o'zgaruvchilari ajraladigan

======

chiziqli

======

bir jinsli

======

Bernulli

yy'/x+$e^y$=0 tenglamaning turini aniqlang

======

#o'zgaruvchilari ajraladigan

======

chiziqli

======

bir jinsli

======

Bernulli

y'=f(x, y) tenglama … tenglama deyiladi, agar f(x, y) funrsiya nolinchi tartibli bir jinsli funksiya bo‘lsa

======

#bir jinsli

======

chiziqli

======

Bernulli

======

Klero

Differensial tenglamaning ... deb, tenglamani ayniyatga aylantiruvchi y = z(x,C) funksiyaga aytiladi

======

#umumiy yechimi

======

xususiy yechimi

======

tartibi

======

xarakteristik tenglamasi

$f(tx, ty)=t^n f(x, y)$ shartni qanoatlantiruvchi $f(x, y)$ funksiyaga ... funksiya deyiladi

======

#bir jinsli

======

chiziqli

======

toq

======

juft

$y'=x(y^2+1)$ tenglamaning turini aniqlang

======

#o'zgaruvchilari ajraladigan

======

chiziqli

======

bir jinsli

======

Bernulli

$y'=-y/x$ tenglamaning $y(2)=1$ dagi xususiy yechimini toping

======

#$y=2/x$

======

$y=2$

======

$y=1/x$

======

$y=2x$

$y''=x$ tenglamaning umumiy yechimini toping

======

#$y=x^3/6+C_1x+C_2$

======

$y=x+C$

======

$y=2x+C$

======

$y=C$

$y''=e^x$ tenglamaning umumiy yechimini toping

======

#$y=e^x+C_1x+C_2$

======

$y=e^x+C$

======

$y=\ln x+C$

======

$y=C$

tgxdx-ctgydy=0 tenglamaning umumiy yechimini toping

======

#sinycosx=C

======

y=tgx+C

======

y=ctgy+C

======

siny+cosx=C

$(1+x^2)$dy+ydx=0 tenglamaning umumiy yechimini toping

======

#lny+arctgx=C

======

lnx+tgy=C

======

arctgx=C

======

x+y=C

ДУ y''-7y'+6y=0 tenglamaning umumiy yechimini toping

======

#$y=C_1e^x+C_2e^{6x}$

======

$y=C_1e^{-7x}+C_2e^{6x}$

======

$y=Ce^{6x}$

======

$y=Ce^x$

ДУ y''-y'-2y=0 tenglamaning umumiy yechimini toping

======

#$y=C_1e^{2x}+C_2e^{-x}$

======

$y=C_1e^{-2x}+C_2e^{-x}$

======

$y=Ce^{-x}$

======

$y=Ce^{2x}$

Agar xarakteristik tenglamaning yechimlari haqiqiy sonlardan iborat bo‘lsa, u holda umumiy yechim …

======

# $y = C_1e^{k_1x} + C_2e^{k_2x} + \ldots$

======

$$y = (C_1 + C_2x + C_3x^2 + \ldots + C_nx^{n-1})e^{kx}$$

======

$$y = e^{\alpha x}(C_1 \cos \beta x + C_2 \sin \beta x)$$

======

$$y = C_1 + C_2x + C_3x^2 + \ldots + C_nx^{n-1}$$

y''-4y'+5y=0 tenglamaning umumiy yechimini toping

======

#$y=e^{2x}(C_1\cos x+C_2\sin x)$

======

$y=e^{x}(C_1\cos x+C_2\sin x)$

======

$y=e^x(C_1\cos2x+C_2\sin2x)$

======

$y=e^{2x}(C_1\cos x-C_2\sin x)$

y'=-y/x tenglamaning umumiy yechimini toping

======

#y=C/x

======

y=Cx

======

y=C+x

======

y=C

Bir jinsli tenglamani yechish uchun … almashtirish bajariladi

======

#y = ux

======

y=uv

======

y=u+v

======

y=z'

Quyidagilarni qaysi biri bir jinsli differnsial tenglama?

======

$$y' = \frac{x^2 y + y^3}{x^3 + x^2 y}$$
#

======

$$y' = \frac{x^2 + y^2}{x^3}$$

======

$$y' + x^2 y + x = 0$$

======

$$y' = \frac{y}{x^2 + y}$$

Bir jinsl differensial tenglamaga keltiriladigan differensial tenglamaning umumiy ko‘rinishini toping

======

$$y' = \frac{a_1 x + b_1 y + c_1}{a_2 x + b_2 y + c_2}$$
#

======

$$y' = \frac{a_1 x + c_1}{a_2 x + c_2}$$

======

$$y' = \frac{a_1 x + b_1 y_1}{a_2 x + b_2 y + c_2}$$

======

$$y' = \frac{b_1 y + c_1}{b_2 y + c_2}$$

$$y' = \frac{a_1 x + b_1 y + c_1}{a_2 x + b_2 y + c_2}$$ tenglama qachon bir jinsl differensial tenglamaga keladi?

======

# $$\begin{vmatrix} a_1 & b_1 \\ a_2 & b_2 \end{vmatrix} \neq 0$$

======

$$\begin{vmatrix} a_1 & b_1 \\ a_2 & b_2 \end{vmatrix} = 0$$

======

$$\begin{vmatrix} c_1 & b_1 \\ c_2 & b_2 \end{vmatrix} \neq 0$$

======

$$\begin{vmatrix} a_1 & c_1 \\ a_2 & c_2 \end{vmatrix} \neq 0$$

Ushbu $y' = \dfrac{x+2y+3}{x+1}$ tenglamani bir jinsliga keltirish uchun qanday almashtirish bajariladi?

======

$$\begin{cases} x = x_1 - 1 \\ y = y_1 - 1 \end{cases}$$
#

======

$$\begin{cases} x = x_1 - 1 \\ y = y_1 + 1 \end{cases}$$

======

$$\begin{cases} x = x_1 + 1 \\ y = y_1 - 1 \end{cases}$$

Berilgan tenglamaning tipini aniqlang: $(x+x^2)y' + x^2y = 0$

======

#o'zgaruvchilari ajraladigan

======

to’la differensial

======

y ga nisbatan chiziqli

======

Bernulli

Tenglamani yeching $y' = e^{-\frac{y}{x}} + \frac{y}{x}$

======

# $y = x\ln\left(\ln(Cx)\right)$

======

$y = \ln\ln\frac{C}{x}$

======

$y = -x\ln\left(\ln(Cx)\right)$

======

$y = x\ln\left(\ln C\right)$

Tenglamani yeching

$y' = \frac{x^2 + y^2}{xy}$

======

$y^2 = x^2\left(2\ln x + C\right)$

#

======

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

======

$$y^2 = x^2 (-2 \ln x + C)$$

======

$$y = x(2 \ln x + C)$$

Chiziqli differensial tenglamani qaysi usulda yechiladi?

======

#Bernulli

======

Gauss

======

Kramer

======

Nyuton

Chiziqli differensial tenglamani qaysi usulda yechiladi?

======

#Lagranj

======

Kramer

======

Gauss

======

Nyuton

Agar $y' + P(x)y = Q(x)$ tenglamaning o‘ng tomoni $Q(x) \equiv 0$ bo‘lsa, ……. tenglama bo‘ladi.

======

# chiziqli bir jinsli

======

Rikatti

======

to‘la differensial

======

Bernulli

$2xe^{-x^2} + \frac{y'}{y} = 0$ tenglamaning turini aniqlang

======

#o'zgaruvchilari ajraladigan

======

chiziqli

======

bir jinsli

======

Bernulli

$y'' - 2y' = 0$ tenglamani harakteristik tenglamasini tuzing.

======

# $k^2 - 2k = 0$

======

$$k^3 - 2k^2 + k = 0$$

======

$$k^2 - 2k - 3 = 0$$

======

$$k^2 - 2k + 2 = 0$$

Xarakteristik tenglamaning ildizi kompleks son bo‘lganda ham tenglama yechimi mavjudmi.

======

#mavjud

======

mavjud emas

======

faqat haqiqiyda mavjud

======

ratsional son bo'lganda mavjud

Koshi masalasi yana qanday shartli masala deyiladi

======

#Boshlang'ich shartli masala

======

Nol shartli masala

======

Klero shartli masala

======

Rittag shartli masala

Koshi masalasi yana qanday shartli masala deyiladi

======

#Boshlang'ich shartli masala

======

Nol shartli masala

======

Klero shartli masala

======

Rittag shartli masala

Yuqori tartibli tenglamada erkli o‘zgaruvchi oshkor holda qatnashmasa qanday yechish mumkin?

======

#Tartibi pasaytirilib

======

Tartibi oshirilib

======

O'zgarmasni yo'qotib

======

O'zgaruvchini ajratib

Boshlang‘ich shartli differensial tenglama yana qanday nomlanadi?

======

#Koshi masalasi

======

Gursa masalasi

======

Farq masalasi

======

o'zgaruvchini almashtirish masalasi

$M(x, y)dx + N(x, y)dy = 0$ tenglama o‘zgaruvchilarga nisbatan bir jinsli deyiladi, agar·… tenglik o‘rinli bo‘lsa

======

# $\frac{\partial M}{\partial y} \equiv \frac{\partial N}{\partial x}$

======

$\frac{\partial M}{\partial y} \neq \frac{\partial N}{\partial x}$

======

$\frac{\partial M}{\partial y} > \frac{\partial N}{\partial x}$

======

$\frac{\partial M}{\partial y} < \frac{\partial N}{\partial x}$

Lagranj tenglamasini aniqlang

======

# $y = x\varphi(y') + \psi(y')$

======

$m(x)dx + n(y)dy = 0$

======

$a(x)y' + b(x)y = c(x)y^{\alpha}$

======

$a(x)y' + b(x)y + c(x)y^{\alpha} = d(x)$

$dy = \sin(2x + 3y)dx$ tenglama qanday almashtirish yordamida o‘zgaruvchilari ajralgan tenglamaga keladi?

======

\# $z = 2x + 3y$

======

$y = zx^{n}$

======

$y = zx$

======

$y = 3e^{2x}$

Ushbu $y' = 2xy$ tenglamaning umumiy yechimini toping.

======

\# $y = ce^{x^2}$

======

$y = ce^{2x}$

======

$x = ce^{y^2}$

======

$y = cx + x^2$

Agar Vronskiy determinanti noldan farqli bo‘lsa, u holda funksiyalar …

======

#chiziqli bog'liq emas

======

chiziqli bog'liq

======

chiziqli

======

chiziqsiz

$y' - 2xy = 0$ englamaning umumiy yechimini toping

======

# $y = c \cdot e^{x^2}$

======

$y = c + e^{x^2/2}$

======

$y = c \cdot e^{2x^2}$

======

$y = c \cdot x^2$

y'+ycosx=1/2sin2x tenglamaning turini aniqlang

======

o'zgaruvchilari ajraladigan

======

#chiziqli

======

bir jinsli

======

Bernulli

$y' = \frac{3x - y}{2x + y}$ tenglama qanday almashtirish yordamida o‘zgaruvchilari ajralgan tenglamaga keladi?

======

# $z = \frac{y}{x}$

======

$y = zx^n$

======

$y' = zy$

======

$y = \frac{z}{x}$

$y''' - 2y'' = 0$ tenglamaning umumiy yechimini toping

======

# $y = c_1 + c_2 x + c_3 e^{2x}$

======

$y = ce^{2x}$

======

$y = c_1e^{2x} + c_2e^{-2x}$

======

$y = ce^{-6x}\sin 6x$

$y''' = x$ tenglamani yeching

======

# $y = \frac{x^4}{24} + \frac{c_1}{2}x^2 + c_2x + c_3$

======

$y = \frac{x^4}{24} + \frac{c_1}{2}x^2$

======

$y = \frac{c_1}{2}x^2 + c_2x$

======

$y = \frac{x^4}{24}$

$y' = \frac{y}{x}$ tenglamani yechimini aniqlang

======

# $y = cx$

======

$y = c + x$

======

$y = c_1 x + c_2$

======

$y = ce^x$

$y'' + 4y = 0$ tenglamaning umumiy yechimini toping

======

\# $y = c_1 \cos 2x + c_2 \sin 2x$

======

$y = c_1 e^{2x} + c_2 e^{-2x}$

======

$y = ce^{-4x}$

======

$y = ce^{-2x} + \frac{1}{3}e^x$

$y''' = x$ tenglamani yeching

======

\# $y = \frac{x^4}{24} + \frac{c_1}{2}x^2 + c_2 x + c_3$

======

$y = \frac{x^4}{24} + \frac{c_1}{2}x^2$

======

$y = \frac{c_1}{2}x^2 + c_2 x$

======

$y = \frac{x^4}{24}$

$y'' - 5y' + 6y = 0$ tenglamaning umumiy yechimi topilsin

======

#$y = c_1 e^{2x} + c_2 e^{3x}$

======

$y = c_1 e^{2x} + c_2 e^{-3x}$

======

$y = c_1 e^{-2x} + c_2 e^{3x}$

======

$y = c_1 e^{-2x} + c_2 e^{-3x}$

$y^2 \frac{\partial z}{\partial x} + xy \frac{\partial z}{\partial y} = 0$ tenglamaning turini aniqlang

======

#xususiy hosilali

======

Bernulli

======

bir jinsli

======

chiziqli

$yy' = \frac{-2x}{\cos y}$ tenglamaning turini aniqlang

======

#o'zgaruvchilari ajraladigan

======

chiziqli

======

bir jinsli

======

Bernulli

$\frac{yy'}{x} + e^{y} = 0$ tenglamaning turini aniqlang

======

#o'zgaruvchilari ajraladigan

======

chiziqli

======

bir jinsli

======

Bernulli

yy'=-2x/cosy tenglamaning turini aniqlang

======

#o'zgaruvchilari ajraladigan

======

chiziqli

======

bir jinsli

======

Bernulli

$y' = \frac{y}{x}\left(\ln\frac{y}{x} + 1\right)$ tenglamaning turini aniqlang

======

#bir jinsli

======

chiziqli

======

Bernulli

======

Klero

xy'+y=xy$^2$lnx tenglamaning turini aniqlang

======

o'zgaruvchilari ajraladigan

======

chiziqli

======

bir jinsli

======

#Bernulli

Agar $\begin{vmatrix} a & b \\ a_1 & b_1 \end{vmatrix} \neq 0$ bo‘lsa, u holda … almashtirish bajariladi

======

# $x = u + \alpha; \qquad y = v + \beta;$

======

$ax + by = t.$

======

y = ux

======

y=uv

Agar $\begin{vmatrix} a & b \\ a_1 & b_1 \end{vmatrix} = 0$ bo‘lsa, u holda … almashtirish bajariladi

======

# $ax + by = t.$

======

y=tx

======

y = ux

======

y=uv

To‘la differensial tenglamaning umumiy yechimi …

======

#u=C

======

u=F(x,y)

======

u=xy

======

u=x/y

$y'' - y' - 2y = 0$ tenglamni yeching.

======

# $y = C_1 e^{-x} + C_2 e^{2x}$

======

$y = C_1 e^{-3x}$

======

$y = C_1 e^{k_1 x}$

======

$y_1 = \mathrm{sh}x$

Differensial tenglamalar sistemasiga mosini ko‘rsating.

======

# $\begin{cases} \dfrac{dx}{dt} = 2(x^2 + y^2)t, \\ \dfrac{dy}{dt} = 4xyt. \end{cases}$

======

$F\left(t,\ U,\ \dfrac{dU}{dt}\right) = 0$

======

$y(t) = \ln|C_1 t + C_2| + C_3,$
$z(t) = (C_1 + 1)t + C_2.$

======

$$\begin{cases} 3A + B = 0, \\ A + B = 10 \end{cases}$$

$dy = \ln(2x + y - 2)dx$ tenglama qanday almashtirish yordamida o‘zgaruvchilari ajralgan tenglamaga keladi?

======

# $z = 2x + y - 2$

======

$y = zx^n$

======

$y = zx$

======

$y = 3e^{2x}$

$y' = f\left(\frac{x - y + 1}{2x - 2y - 3}\right)$ tenglama qanday almashtirish yordamida o‘zgaruvchilari ajralgan tenglamaga keladi?

======

# $z = x - y$

======

$z = yx^2$

======

$z = yx$

======

$z = ye^{\alpha x}$

$y' - xy = 0$ tenglamaning umumiy yechimini toping.

======

# $y = c \cdot e^{x^2/2}$

======

$y = c + e^{x^2/2}$

======

$y = c \cdot e^{x^2}$

======

$y = c \cdot x^2$

Hususiy yechimi $y_1 = xe^x$ bo‘lgan chiziqli o‘zgarmas koeffisientli differensial tenglamani ko‘rsating

======

# $y'' - 2y' + y = 0$

======

$y'' - 2y' - 3y = 0$

======

$y' - y = 0$

======

$y'' + 2y'' + y = 0$ $y'' + 2y'' + y = 0$

Ushbu $3x^2ydx+\left(x^3-3y^2\right)dy=0$ tenglamaning umumiy yechimini toping:

======

# $x^3y-y^3=c$

======

$x^2y^2-y=c$

======

$xy-y^2=c$

======

$xy^2+y=c$

$y''+9y'=0$ tenglamaning umumiy yechimini toping:

======

# $y=c_1+c_2e^{-9x}$

======

$y=c_1e^{3x}+c_2e^{-3x}$

======

$y=c_1\cos 3x+c_2\sin 3x$

======

$y=c_1+c_2e^{9x}$

$y''-y'-2y=0$ tenglamaning umumiy yechimi topilsin

======

# $y = c_1 e^{-x} + c_2 e^{2x}$

======

$y = c_1 e^{-x} + c_2 e^{-2x}$

======

$y = c_1 e^{x} + c_2 e^{-2x}$

======

$y = c_1 e^{x} + c_2 e^{2x}$

xy'=yln(y/x) tenglamaning turini aniqlang

======

#o'zgaruvchilari ajraladigan

======

chiziqli

======

bir jinsli

======

Bernulli

Qanday almashtirish bajarilsa ushbu $y' - xy = 4\sqrt{y}$ tenglama chiziqli tenglamaga keladi?

======

# $z = \sqrt{y}$

======

$y = zx$

======

$z = \frac{1}{\sqrt{y}}$

======

$y = zx^2$

Ushbu $y = cx^2$ chiziqlar sinfining differensial tenglamasini toping

======

# $xy' = 2y$

======

$y' = y^{\frac{2}{x}}$

======

$y'x = 3y$

======

$y'x^2 = y^2$

$x\frac{d^2y}{dx^2} + xy\frac{dy}{dx} + x^2 = y$ tenglama nechanchi tartibli

======

#ikkinchi

======

birinchi

======

bir jinsli

======

chiziqli

$x^2 y' + y = ax^2 e^{\frac{1}{x}}$. tenglamaning turini aniqlang

======

#chiziqli

======

Bernulli

======

Klero

======

Lagranj

Bernulli tenglamasini techish uchun … almashtirish bajariladi

======

# $z = \frac{1}{y^{n-1}}$

======

y=uv

======

y=ux

======

y=x+u

$xy' - 4y = x^2 \sqrt{y}$. tenglamaning turini aniqlang

======

#Bernulli

======

chiziqli

======

Klero

======

Lagranj

Agar noma’lum funksiya faqat bitta o‘zgaruvchiga bog‘liq bo‘lsa, bunday differensial tenglamaga … differensial tenglama deyiladi

======

#oddiy

======

tartibli

======

umumiy yechimli

======

xususiy yechimli

Agar noma’lum funksiya ikki yoki undan ortiq o‘zgaruvchiga bog‘liq bo‘lsa, bunday differensial tenglamaga … differensial tenglama deyiladi.

======

#xususiy hosilali

======

oddiy

======

yuqori tartibli

======

umumiy yechimli

Differensial tenglamaga kirgan hosilalarning eng yuqori tartibi tenglamaning ... deyiladi.

======

#tartibi

======

xususiy yechimi

======

chegarasi

======

umumiy yechimli

$x^3 y' + 8y - x + 5 = 0$ tenglamaning tartibini aniqlang.

======

#birinchi tartibli

======

ikkinchi tartibli

======

uchinchi tartibli

======

to‘rtinchi tartibli

Tenglamaning tipini aniqlang:

$$y^2 \frac{\partial z}{\partial x} + xy \frac{\partial z}{\partial y} = 0$$

======

#xususiy hosilali

======

ikkinchi tartibli

======

chiziqli

======

oddiy

O‘zgaruvchilari ajraladigan differensial tenglamani aniqlang.

======

# $\left(1-e^{2x}\right)ydx=e^{x}dy$

======

$$y'\ln y=y+x$$

======

$$(x^2+2xy)dy=(xy+y^2)dx.$$

======

$$y'-x^2y=xy^3$$

Agar chiziqli bir jinsli differensial tenglamada bir tomoni noldan farqli bo‘lmasa, u ...... tenglama deyiladi.

======

#chiziqli bir jinsli bo'lmagan

======

chiziqli bir jinsli bo'lgan

======

chiziqli ko'p tarmoqli

======

chiziqli bir koeffisientli

Differensial tenglamani yeching:

$$y' + \frac{3y}{x} = \frac{3}{x}$$

======

$$y = 1 + \frac{C}{x^3}$$

#

======

$$y = 1 - \frac{C}{x^3}$$

======

$$y = \frac{C + x}{x^3}$$

======

$$y = \frac{C - x}{x^3}$$

Bernulli tenglamasi qanday tenglamaga keltiriladi?

======

#Chiziqli

======

Bir jinsli

======

Eyler

======

Rikkati

Differensial tenglamada uning umumiy yechimidan ixtiyoriy o‘zgarmasning hech bir qiymatida hosil qilish mumkin bo‘lmagan yechim nima deb ataladi?

======

#maxsus yechim

======

xususiy yechim

======

umumiy yechim

======

maxsus nuqta

Ushbu $y = 2xy' + \sin y'$ tenglama ... tenglamasi deb ataladi.

======

#Lagranj

======

Bernulli

======

Klero

======

Rikkati

2(x+y)dy+(3x+3y-1)dx=0 tenglamaning turini aniqlang

======

#bir jinsliga keladigan

======

bir jinsli

======

chiziqli

======

$y'' = e^{-x} + x$ tenglamaning yeching

Bernulli ______________________________________

======

# $y = e^{-x} + \frac{x^3}{6} + C_1 x + C_2$

======

$y = e^{-x} + \frac{x^3}{6} + C_1$

======

$y = e^{-x} + \frac{x^3}{3} + C_1 x + C_2$

======

$y = e^{-x} + \frac{x^3}{2} + C_1 x + C_2$

Tenglamani yeching $y' = \frac{y}{x - y}$

======

# $x = y \ln\left(\frac{C}{y}\right)$

======

$y = x \ln\left(\frac{C}{y}\right)$

======

$$y = x\ln\left(\frac{C}{x}\right)$$

======

$$y = x\ln\left(\frac{y}{C}\right)$$

Bir jinsli differensial tenglama uchun Koshi masalasi aniqlang

======

# $\begin{cases} x^3y' = x^2y + y^3 \\ y(1) = 2 \end{cases}$

======

$$\begin{cases} y'' = 3x \cdot y \\ y(1) = 3 \end{cases}$$

======

$$\begin{cases} y' = x + yx^2 \\ y(1) = 2; y(2) = 5 \end{cases}$$

======

$$\begin{cases} y' = f(x, y) \\ x + y = 3 \end{cases}$$

Agar $y' + P(x)y = Q(x)$ tenglamaning o'ng tomoni $Q(x) \equiv 0$ bo'lsa, ……. tenglama bo'ladi.

======

#chiziqli bir jinsli

======

Rikatti

======

to‘la differensial

======

Bernulli

Agar birinchi tartibli
$y' = f(x, y)$ differensial
tenglamaning o‘ng tomoni x va
y ga nisbatan nol o‘lchovli bir
jinsli funksiya bo‘lsa, bunday
tenglama . . . tenglama deyiladi.

======

#bir jinsli differensial

======

oddiy differensial

======

umumiy yechimsiz

======

xususiy yechimli

$y' + P(x)y = Q(x)$
tenglamanini yechishning Lagranj
usulida umumiy yechim …
ko`rinishda izlanadi

======

$$y = C(x)e^{-\int P(x)dx}$$
#

======

$$y = C(x)e^{\int P(x)dx}$$

======

$$y = C(x)e^{P(x)}$$

======

$$y = e^{-\int P(x)dx}$$

Ushbu $y' = \dfrac{x+2y+4}{x+2y}$ tenglamani bir jinsliga keltirish uchun qanday almashtirish bajariladi?

======

$$\begin{cases} x = x_1 - 2 \\ y = y_1 - 1 \end{cases}$$
#

======

$$\begin{cases} x = x_1 - 2 \\ y = y_1 + 1 \end{cases}$$

======

$$\begin{cases} x = x_1 + 2 \\ y = y_1 + 1 \end{cases}$$

======

$$\begin{cases} x = x_1 + 2 \\ y = y_1 - 1 \end{cases}$$

Ushbu

$y' + P(x)y = Q(x)y^n$

ko‘rinishdagi tenglama qanday nomlanadi?

======

#Bernulli tenglamasi

======

Chiziqli tenglama

======

Eyler tenglamasi

======

Rikkati tenglamasi

Bernulli tenglamasi qanday tenglamaga keltiriladi?

======

#Chiziqli

======

Bir jinsli

======

Eyler

======

Rikkati

Quyidagilarni qaysi biri chiziqli tenglamaning umumiy ko‘rinishi?

======

# $y' + P(x)y = Q(x)$

======

$y' + P(x)y = Q(y)$

======

$y' + P(x)y = Q(x)y^n$

======

$y' + P(y)x = 0$

Tenglamani yeching $y' = \dfrac{y}{x+y}$

======

# $x = y\ln(Cy)$

======

$y = y\ln(Cx)$

======

$y = x\ln(Cy)$

======

$\ln y + \dfrac{y}{x} = C$

$\left(y^2-2x^2\right)dy+2xydx=0$

Differensial tenglamani $y(1)=1$ boshlanich shartni qanoatlantiruvchi xususiy yechimini toping

======

# $x^2-y^2\left(1-\ln y\right)=0$

======

$x+y^2\left(-1+\ln y\right)=0$

======

$x^2-y^2\left(1+\ln y\right)=0$

======

$x^2-y\left(1-\ln y\right)=0$

Tenglamani yeching
$x^2y'=-y^2+xy$

======

# $y=\dfrac{x}{\ln x+C}$

======

$y=\dfrac{\ln x+C}{x}$

======

$y=x(\ln x+C)$

======

$y = x \ln x + C$

Tenglamani yeching: $y^2 y' = x^2$

======

# $y = \sqrt[3]{x^3 - C}$

======

$y = \sqrt[3]{x^2 - C}$

======

$y = x\sqrt[3]{x^3 - C}$

======

$y = x\sqrt[3]{x^2 - C}$

Differensial tenglamani yeching:
$y' + 3y = e^x$

======

# $y = \dfrac{C + e^{4x}}{4e^{3x}}$

======

$y = \dfrac{C + e^{4x}}{e^{3x}}$

======

$y = \dfrac{C + e^{3x}}{4e^{4x}}$

======

$$y = \frac{C - e^{4x}}{4e^{3x}}$$

Quyidagilarning qaysi biri 1-tartibli chiziqli differensial tenglama?

======

# $y' + x^3 y + 3x^2 = 0$

======

$y' + xy^2 + 2x = 0$

======

$y' + x^2 y^2 + x = 0$

======

$y' + x\sin y + 5 = 0$

Quyidagilarning qaysi biri 1-tartibli chiziqli differensial tenglamaning umumiy ko`rinishi?

======

# $y' + p(x) \cdot y + q(x) = 0$

======

$y' + p(x) \cdot y'' + q(x) = 0$

======

$y' = \varphi(x) \cdot g(y)$

======

$y' = \varphi(x) + g(y)$

$y' + P(x)y = Q(x)$
tenglamanini yechishning Bernulli usulida umumiy yechim … ko‘rinishda qidirildi

======

# $y = uv$

======

$y = p'$

======

$y = \varphi(x)$

======

$y = pp'$

Tenglamani umumiy yechimini toping
$y' = 4x + y$

======

# $y = Ce^x - 4x - 4$

======

$y = e^x + x^2 + C$

======

$y = e^x + C\left(x^2 + x\right)$

======

$y = e^x + x + C$

Quyidagilarni qaysi biri chiziqli differnsial tenglamaning yechishning almashtirishi hisoblanadi

======

# $y = u(x) \cdot v(x)$

======

$y = x \cdot u(x)$

======

$y = u(x) \cdot v(y)$

======

$y = x \cdot v(y)$

Differensial tenglamani yeching:

$$y' - 2xy = e^{x^2}$$

======

#$y = (C + x)e^{x^2}$

======

$y = (C + x)e^x$

======

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

======

$y = C + xe^{x^2}$

---

Differensial tenglamani yeching:

$$y' + \frac{3y}{x} = \frac{3}{x}$$

======

# $y = 1 + \frac{C}{x^3}$

======

$y = 1 - \frac{C}{x^3}$

======

$y = \frac{C + x}{x^3}$

======

$y = \frac{C - x}{x^3}$

Ushbu

$y' + P(x)y = Q(x)y^n$

Bernulli tenglamasini chiziqli tenglamaga keltirish uchun qanday almashtirish qo‘llanadi?

======

$z = y^{-n+1},$

# $z' = (-n+1)y^{-n} \cdot y'$

======

$$z = y^{-n+1},$$
$$z' = (-n+1)\, y^{-n}$$

======

$$y = u \cdot x$$
$$y' = u' \cdot x + u$$

======

$$y = u \cdot v$$
$$y' = u' \cdot v + u \cdot v'$$

Quyidagi tenglamalarni qaysi biri Bernulli tenglamasi hisoblanadi:

======

#$y' + P(x)\, y = Q(x)\, y^{\alpha}$

======

$y' + P(x)y + Q(x)y^2 = F(x)$

======

$y' + Q(x)\, y^2 = F(x)$

======

$y' + Q(x)y^2 = F(x)y^{\alpha}$

$1+y'^2 = y\,y''$ tenglamada qanday almashtirish bajariladi?

======

# $y' = p,\ y'' = p\dfrac{dp}{dy}$

======

$p = y',\ p' = y''$

======

$y' = p,\ y'' = \dfrac{dp}{dy}$

======

$y' = p,\ y'' = p\dfrac{dp}{dx}$

---

$y' + P(x)y = Q(x)y^n$ tenglamada $Q(x)$ qanday bo'lsa, chiziqli bir jinsli tenglama deyiladi?

======

# $Q(x) \equiv 0$

======

$Q(x) \neq 0$

======

$Q(x)=1$

======

$Q(x)=x$

$y''=e^{-x}$ tenglamaning umumiy yechimini toping

======

# $y=e^{-x}+C_1x+C_2$

======

$y=e^{-x}+C_1x^2$

======

$y=-e^{-x}+C_1x+C_2$

======

$y=e^{-x}+C_1+C_2$

$y'''=x$ tenglamaning umumiy yechimini toping

======

# $y=\frac{1}{24}x^4+\frac{1}{2}C_1x^2+C_2x+C_3$

======

$y=x^2+x+1$

======

$$y = x^2 + C_1x + C_2$$

======

$$y = x^2 - C_1x + C_2$$

$xy'' = y' \ln\dfrac{y'}{x}$ tenglamada qanday almashtirish bajariladi?

======

$$p = y', \ p' = y''$$

#

======

$$y' = p, \ y'' = p\frac{dp}{dy}$$

======

$$y'' = p\frac{dp}{dy}$$

$M(x, y)dx + N(x, y)dy = 0$ tenglama to‘la differensial tenglama bo‘lishining zaruriy va yetarli shartini aniqlang.

======

$$\frac{\partial N}{\partial x} = \frac{\partial M}{\partial y}$$
#

======

$$\frac{\partial M}{\partial x} = \frac{\partial N}{\partial y}$$

======

$$\frac{\partial N}{\partial x} \neq \frac{\partial M}{\partial y}$$

======

$$\frac{\partial^2 N}{\partial x \partial y} = \frac{\partial^2 M}{\partial y \partial x}$$

Quyidagi tenglama uchun integralovchi ko‘paytuvchi qanday bo‘ladi:

$$\left(x^2 - y\right)dx + \left(x^2 y^2 + x\right)dy = 0$$

======

$$\mu(x) = \frac{1}{x^2}$$
#

======

$$\mu(x) = \frac{1}{x}$$

======

$$\mu(x) = x$$

======

$\mu(x)=x^2$

Quyidagi tenglama uchun integralovchi ko‘paytuvchi qanday bo‘ladi:
$(1-yx)dx+x(y-x)dy=0$ ?

======

# $\mu(x)=\dfrac{1}{x}$

======

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

======

$\mu(y)=\dfrac{1}{y^2}$

======

$\mu(y)=\dfrac{1}{y}$

Quyidagi tenglama uchun integralovchi ko‘paytuvchi qanday bo‘ladi:
$ydx-(x+y^2)dy=0$ ?

======

# $\mu(y)=\dfrac{1}{y^2}$

======

$$\mu(y)=y^2$$

======

$$\mu(x)=\frac{1}{x}$$

======

$$\mu(x)=x$$

Differensial tenglamada uning umumiy yechimidan ixtiyoriy o‘zgarmasning hech bir qiymatida hosil qilish mumkin bo‘lmagan yechim nima deb ataladi?

======

#maxsus yechim

======

xususiy yechim

======

umumiy yechim

======

maxsus nuqta

$\left(1-x^2\right)y''-xy'=2$ tenglamada qanday almashtirish bajariladi?

======

$$p=y',\ p'=y''$$

#

======

$$p'=y''$$

======

$$p = y'$$

======

$$y' = p,\ y'' = p\frac{dp}{dy}$$

$y''' = \cos x$ tenglamining umumiy yechimini toping

======

$$y = -\sin x + \frac{C_1 x^2}{2} + C_2 x + C_3$$

#

======

$$y = -\sin x + C$$

======

$$y = \sin x + \frac{C_1 x}{2} + C_2$$

---

======

$$y = -\sin x + \frac{Cx^2}{2}$$

## Test savollari

1. Differensial tenglamada qachon noʻmalum koeffisientlar usulidan foydalanish mumkin?

a) koeffisientlar oʻzgarmas boʻlgan holda
b) koeffisientlar karrali boʻlgan holda
c) koeffisientlar koʻp boʻlgan holda
d) koeffisientlar insident boʻlgan holda

2. $y'=y^{2/3}$ tenglamaning turini aniqlang

a) oʻzgaruvchilari ajraladigan
b) chiziqli
c) bir jinsli
d) Bernulli

3. Differensial tenglamaning ... deb, tenglamani ayniyatga aylantiruvchi y = z(x,C) funksiyaga aytiladi

a) umumiy yechimi
b) xususiy yechimi
c) tartibi
d) xarakteristik tenglamasi

4. $y'=x(y^2+1)$ tenglamaning turini aniqlang

a) oʻzgaruvchilari ajraladigan
b) chiziqli
c) bir jinsli
d) Bernulli

5. $y' = \dfrac{y}{x}$ tenglamani yechimini aniqlang

a) $y = cx$
b) $y = c + x$
c) $y = c_1e^{2x} + c_2e^{-2x}$
d) $y = ce^{-4x}$

6. y'=y/x(ln(y/x)+1) tenglamaning turini aniqlang

a) bir jinsli
b) Klero

c) chiziqli
d) Bernulli

7. y'cosx=(y+1)sinx tenglamaning turini aniqlang

a) o‘zgaruvchilari ajraladigan
b) chiziqli
c) bir jinsli
d) Bernulli

8. y'=x(y$^2$+1) tenglamaning turini aniqlang

a) o‘zgaruvchilari ajraladigan
b) chiziqli
c) bir jinsli
d) Bernulli

9. $dy = \sin(2x+3y)dx$ tenglama qanday almashtirish yordamida o‘zgaruvchilari ajralgan tenglamaga keladi?

a) $z = 2x + 3y$
b) $y = zx^n$
c) $y = zx$
d) $y = 3e^{2x}$

10. $y' = \dfrac{y}{x \ln x}$ tenglamani yechimini aniqlang.

a) $y = c \ln x$
b) $y = c + \ln x$
c) $y = c \ln x + x$
d) $y = ce^x$

11. $y'' - y' - 2y = 0$ tenglamni yeching.

a) $y = C_1 e^{-x} + C_2 e^{2x}$

b) $y = C_1 e^{-3x}$

c) $y = C_1 e^{k_1 x}$

d) $y_1 = \text{sh}x$

12. Differensial tenglamalar sistemasiga mosini ko‘rsating.

a) $\begin{cases} \dfrac{dx}{dt} = 2(x^2 + y^2)t, \\ \dfrac{dy}{dt} = 4xyt. \end{cases}$

b) $F\left(t,\ U,\ \dfrac{dU}{dt}\right) = 0$

c) $y(t) = \ln|C_1 t + C_2| + C_3,$
$z(t) = (C_1 + 1)t + C_2.$

d) $\begin{cases} 3A + B = 0, \\ A + B = 10 \end{cases}$

13. $dy = \ln(2x + y - 2)dx$ tenglama qanday almashtirish yordamida o‘zgaruvchilari ajralgan tenglamaga keladi?

a) $z = 2x + y - 2$

b) $y = zx^n$

c) $y = zx$

d) $y = 3e^{2x}$

14. $y' = f\left(\dfrac{x - y + 1}{2x - 2y - 3}\right)$ tenglama qanday almashtirish yordamida o‘zgaruvchilari ajralgan tenglamaga keladi?

a) $z = x - y$

b) $z = yx^2$

c) $z = yx$

d) $z = ye^{ax}$

15. $(1+x^2)dy+ydx=0$ tenglamaning umumiy yechimini toping

a) lny+arctgx=C
b) lnx+tgy=C
c) arctgx=C
d) x+y=C

16. y''-7y'+6y=0 tenglamaning umumiy yechimini toping

a) $y=C_1e^x+C_2e^{6x}$
b) $y=C_1e^{-7x}+C_2e^{6x}$
c) $y=Ce^{6x}$
d) $y=Ce^x$

17. y''-y'-2y=0 tenglamaning umumiy yechimini toping

a) $y=C_1e^{2x}+C_2e^{-x}$
b) $y=C_1e^{-2x}+C_2e^{-x}$
c) $y=Ce^{-x}$
d) $y=Ce^{2x}$

18. y'lny=y tenglamaning turini aniqlang

a) o‘zgaruvchilari ajraladigan
b) chiziqli
c) bir jinsli
d) Bernulli

19. $y' = \frac{y}{x}\left(\ln\frac{y}{x} + 1\right)$ tenglamaning turini aniqlang

a) bir jinsli
b) chiziqli
c) Bernulli
d) Klero

20. $y'' - 2y' = 0$ tenglamani harakteristik tenglamasini tuzing.

a) $k^2 - 2k = 0$

b) $k^3 - 2k^2 + k = 0$

c) $k^2 - 2k - 3 = 0$

d) $k^2 - 2k + 2 = 0$

21. Xarakteristik tenglamaning ildizi kompleks son bo‘lganda ham tenglama yechimi mavjudmi.

a) mavjud
b) mavjud emas
c) faqat haqiqiyda mavjud
d) ratsional son bo‘lganda mavjud

22. Koshi masalasi yana qanday shartli masala deyiladi

a) Boshlang‘ich shartli masala
b) Nol shartli masala
c) Klero shartli masala
d) Rittag shartli masala

23. $dy = \sin(2x + 3y)dx$ tenglama qanday almashtirish yordamida o‘zgaruvchilari ajralgan tenglamaga keladi?

a) $z = 2x + 3y$

b) $y = zx^n$

c) $y = zx$

d) $y = 3e^{2x}$

24. y'+ycosx=1/2sin2x tenglamaning turini aniqlang

a) o‘zgaruvchilari ajraladigan
b) chiziqli
c) bir jinsli
d) Bernulli

25. $y' = \frac{3x - y}{2x + y}$ tenglama qanday almashtirish yordamida o‘zgaruvchilari ajralgan tenglamaga keladi?

a) $z = \frac{y}{x}$

b) $y = zx^n$

c) $y' = zy$

d) $y = \frac{z}{x}$

26. $y''' - 2y'' = 0$ tenglamaning umumiy yechimini toping

a) $y = c_1 + c_2 x + c_3 e^{2x}$

b) $y = ce^{2x}$

c) $y = c_1 e^{2x} + c_2 e^{-2x}$

d) $y = ce^{-6x} \sin 6x$

27. $y''' = x$ tenglamani yeching

a) $y = \frac{x^4}{24} + \frac{c_1}{2} x^2 + c_2 x + c_3$

b) $y = \frac{x^4}{24} + \frac{c_1}{2} x^2$

c) $y = \frac{c_1}{2} x^2 + c_2 x$

d) $y = \frac{x^4}{24}$

28. $y''' = x$ tenglamani yeching

a) $y = \frac{x^4}{24} + \frac{c_1}{2}x^2 + c_2 x + c_3$

b) $y = \frac{x^4}{24} + \frac{c_1}{2}x^2$

c) $y = \frac{c_1}{2}x^2 + c_2 x$

d) $y = \frac{x^4}{24}$

29. $y'' - 5y' + 6y = 0$ tenglamaning umumiy yechimi topilsin

a) $y = c_1 e^{2x} + c_2 e^{3x}$

b) $y = c_1 e^{2x} + c_2 e^{-3x}$

c) $y = c_1 e^{-2x} + c_2 e^{3x}$

d) $y = c_1 e^{-2x} + c_2 e^{-3x}$

30. $x\frac{d^2y}{dx^2} + xy\frac{dy}{dx} + x^2 = y$ tenglama nechanchi tartibli

a) ikkinchi
b) birinchi
c) bir jinsli
d) chiziqli

31. $y^2\frac{\partial z}{\partial x} + xy\frac{\partial z}{\partial y} = 0$ tenglamaning turini aniqlang

a) xususiy hosilali
b) Bernulli

c) bir jinsli
d) chiziqli

32. $yy' = \frac{-2x}{\cos y}$ tenglamaning turini aniqlang

a) o‘zgaruvchilari ajraladigan
b) chiziqli
c) bir jinsli
d) Bernulli

33. $\frac{yy'}{x} + e^{y} = 0$ tenglamaning turini aniqlang

a) o‘zgaruvchilari ajraladigan
b) chiziqli
c) bir jinsli
d) Bernulli

34. Chiziqli tenglama … usuli yordamida yechiladi

a) Bernulli
b) Nyuton
c) Kramer
d) Gauss

35. Agar xarakteristik tenglamaning yechimlari haqiqiy sonlardan iborat bo‘lsa, u holda umumiy yechim …

a) $y = C_1 e^{k_1 x} + C_2 e^{k_2 x} + \ldots$
b) $y = (C_1 + C_2 x + C_3 x^2 + \ldots + C_n x^{n-1}) e^{kx}$
c) $y = e^{\alpha x} (C_1 \cos \beta x + C_2 \sin \beta x)$
d) $y = C_1 + C_2 x + C_3 x^2 + \ldots + C_n x^{n-1}$

36. y''-4y'+5y=0 tenglamaning umumiy yechimini toping

a) $y=e^{2x}(C_1\cos x+C_2\sin x)$
b) $y=e^{x}(C_1\cos x+C_2\sin x)$
c) $y=e^{x}(C_1\cos 2x+C_2\sin 2x)$
d) $y=e^{2x}(C_1\cos x-C_2\sin x)$

37. y'=-y/x tenglamaning umumiy yechimini toping

a) y=C/x
b) y=Cx
c) y=C+x
d) y=C

38. $y''' + 3y' = x$ , $y(0) = 1,\ y'(0) = 3\ \ y''(0) = 2$ Ushbu masala qanday masala deyiladi.

a) Koshi masalasi
b) Chegaraviy masala
c) Variasion masala
d) Gursa masalasi

39. (x-2y+3)dy+(2x+y-1)dx=0 tenglamaning turini aniqlang

a) bir jinsliga keladigan
b) bir jinsli
c) chiziqli
d) Bernulli

40. Differensial tenglamada ko‘p argumentli hol bo‘lsa,......... deyiladi

a) Hususiy hosilali differensial tenglama
b) Ko‘p hosilali differensial tenglama
c) Karrali hosilali differensial tenglama
d) Yopiq differensial tenglama

41. $y'' - 16y = 0$ tenglamaning umumiy yechimini toping.

a) $y = c_1 e^{4x} + c_2 e^{-4x}$
b) $y = c_1 \cos 4x + c_2 \sin 4x$
c) $y = ce^{-16x}$
d) $y = c_1 e^{-4x} \cos 4x + c_2 e^{-4x} \sin 4x$

42. $y'' + 16y = 0$ tenglamaning umumiy yechimini toping

a) $y = c_1 \cos 4x + c_2 \sin 4x$

b) $y = ce^{-16x}$

c) $y = c_1 e^{4x} + c_2 e^{-4x}$

d) $y = c_1 e^{-4x} \cos 4x + c_2 e^{-4x} \sin 4x$

43. Berilgan tenglamaning tipini aniqlang: $(x + x^2)y' + x^2 y = 0$

a) o‘zgaruvchilari ajraladigan
b) to‘la differensial
c) y ga nisbatan chiziqli
d) Bernulli

44. $(2x + 3x^2)dx + 2ydy = 0$ tenglamaning umumiy yechimini toping

a) $x^2 + x^3 + y^2 = c$

b) $x^2 y + y^3 = c$

c) $x^2 y + x^3 = c$

d) $\dfrac{x}{y} + x^3 = c$

45. y''=x tenglamaning umumiy yechimini toping

a) $y=x^3/6+C_1x+C_2$
b) y=x+C
c) y=2x+C
d) y=C

46. $y'' - 2y' = 0$ tenglamaning umumiy yechimini toping.

a) $y = c_1 + c_2 e^{2x}$

b) $y = c_1 e^{2x} + c_2 e^{-2x}$

c) $y = ce^{-2x}$

d) $y = c_1 \cos 2x + c_2$

47. $y' = f\left(\frac{x - y + 1}{2x - 2y - 3}\right)$ tenglama qanday almashtirish yordamida o‘zgaruvchilari ajralgan tenglamaga keladi?

a) $z = x - y$

b) $z = yx^2$

c) $z = yx$

d) $z = ye^{ax}$

48. $y'' - 5y' + 6y = 0$ tenglamaning umumiy yechimi topilsin

a) $y = c_1 e^{2x} + c_2 e^{3x}$

b) $y = c_1 e^{2x} + c_2 e^{-3x}$

c) $y = c_1 e^{-2x} + c_2 e^{3x}$

d) $y = c_1 e^{-2x} + c_2 e^{-3x}$

49. Differensial tenglama deb,............... aytiladi?

a) erkli o‘zgaruvchi, noma'lum funksiya va uning hosilalari orasidagi bog‘lanishli tenglamaga aytiladi
b) erkli o‘zgaruvchi, noma'lum funksiya va uning boshlang‘ich tenglamaga aytiladi

c) noma'lum funksiya va uning boshlang‘ich tenglamaga aytiladi
d) boshlang‘ich shartli

50. $y''=e^x$ tenglamaning umumiy yechimini toping

a) $y=e^x+C_1x+C_2$
b) $y=e^x+C$
c) y=lnx+C
d) y=C

51. $y''' - 2y'' = 0$ tenglamaning umumiy yechimini toping

a) $y=c_1+c_2x+c_3e^{2x}$
b) $y = ce^{2x}$
c) $y = c_1e^{2x} + c_2e^{-2x}$
d) $y = ce^{-6x}\sin 6x$

52. Agar $\begin{vmatrix} a & b \\ a_1 & b_1 \end{vmatrix} = 0$ bo‘lsa, u holda … almashtirish bajariladi

a) $ax + by = t.$
b) y=tx
c) y = ux
d) y=uv

53. Agar Vronskiy determinanti noldan farqli bo‘lsa, u holda funksiyalar …

a) chiziqli bog‘liq emas
b) chiziqli bog‘liq
c) chiziqli
d) chiziqsiz

54. $x^2y' + y = ax^2e^{\frac{1}{x}}.$ tenglamaning turini aniqlang

a) chiziqli
b) Bernulli
c) Klero
d) Lagranj

55. $xy' - 4y = x^2\sqrt{y}.$ tenglamaning turini aniqlang

a) Bernulli
b) chiziqli
c) Klero
d) Lagranj

56. Agar differensial tengama bir o‘zgaruvchili bo‘lsa, u holda u ... differensial tenglama deyiladi

a) oddiy
b) xarakteristik
c) umumiy
d) xususiy hosilali

57. Agar differensial tengama ikki va undan ortiq o‘zgaruvchili bo‘lsa, u holda u ... differensial tenglama deyiladi

a) xususiy hosilali
b) oddiy
c) umumiy
d) xarakteristik

58. y'=f(x, y) tenglama … tenglama deyiladi, agar f(x, y) funrsiya nolinchi tartibli bir jinsli funksiya bo‘lsa

a) bir jinsli
b) chiziqli
c) Bernulli
d) Klero

59. Yuqori tartibli tenglamada erkli o‘zgaruvchi oshkor holda qatnashmasa qanday yechish mumkin?

a) Tartibi pasaytirilib
b) Tartibi oshirilib
c) O‘zgarmasni yo‘qotib
d) O‘zgaruvchini ajratib

60. Boshlang‘ich shartli differensial tenglama yana qanday nomlanadi?

a) Koshi masalasi
b) Gursa masalasi
c) Farq masalasi
d) o‘zgaruvchini almashtirish masalasi

61. Agar chiziqli bir jinsli differensial tenglamada bir tomoni noldan farqli bo‘lmasa, u ...... tenglama deyiladi.

a) chiziqli bir jinsli bo‘lmagan
b) chiziqli bir jinsli bo‘lgan
c) chiziqli ko‘p tarmoqli
d) chiziqli bir koeffisientli

62. $y'' + 9y' = 0$ tenglamaning umumiy yechimini toping:

a) $y = c_1 + c_2 e^{-9x}$

b) $y = c_1 e^{3x} + c_2 e^{-3x}$

c) $y = c_1 \cos 3x + c_2 \sin 3x$

d) $y = c_1 + c_2 e^{9x}$

63. Lagranj tenglamasini aniqlang

a) $y = x\varphi(y') + \psi(y')$

b) $m(x)dx + n(y)dy = 0$

c) $a(x)y' + b(x)y = c(x)y^{\alpha}$

d) $a(x)y' + b(x)y + c(x)y^{\alpha} = d(x)$

64. yy'/x+e$^y$=0 tenglamaning turini aniqlang

a) o‘zgaruvchilari ajraladigan
b) chiziqli
c) bir jinsli
d) Bernulli

65. $y'' - y' - 2y = 0$ tenglamaning umumiy yechimi topilsin

a) $y = c_1 e^{-x} + c_2 e^{2x}$

b) $y = c_1 e^{-x} + c_2 e^{-2x}$

c) $y = c_1e^x + c_2e^{-2x}$

d) $y = c_1e^x + c_2e^{2x}$

66. xy'=yln(y/x) tenglamaning turini aniqlang

a) o‘zgaruvchilari ajraladigan
b) chiziqli
c) bir jinsli
d) Bernulli

67. $2xe^{-x^2} + \frac{y'}{y} = 0$ tenglamaning turini aniqlang

a) o‘zgaruvchilari ajraladigan
b) chiziqli
c) bir jinsli
d) Bernulli

68. Chiziqli tenglamani yechish uchun qanday almashtirish bajariladi

a) y=uv
b) y=ux
c) y=x+u
d) y=x+v

69. $y' = \frac{y}{x}$ tenglamani yechimini aniqlang

a) $y = cx$

b) $y = c + x$

c) $y = c_1x + c_2$

d) $y = ce^x$

70. $y'' + 4y = 0$ tenglamaning umumiy yechimini toping

a) $y = c_1\cos 2x + c_2\sin 2x$

b) $y = c_1 e^{2x} + c_2 e^{-2x}$

c) $y = ce^{-4x}$

d) $y = ce^{-2x} + \frac{1}{3}e^{x}$

71. To‘la differensial tenglama bo‘lish sharti …

a) $\frac{\partial P}{\partial y} = \frac{\partial Q}{\partial x}$

b) $u = \int P(x, y)dx + C(y)$

c) $\frac{\partial u}{\partial y} = P$

d) y=tx

72. Differensial tenglama tarkibiga kiruvchi eng yuqori hosila tartibi differensial tenglamaning ... deyiladi

a) tartibi
b) yechimi
c) sharti
d) funksiyasi

73. (x-2y+3)dy+(2x+y-1)dx=0 tenglamaning turini aniqlang

a) bir jinsliga keladigan
b) bir jinsli
c) chiziqli
d) Bernulli

74. y = z(x, $C_0$) ko‘rinishdagi funksiya differensial tenglamaning ... yechimi deyiladi

a) xususiy
b) umumiy
c) xos
d) xosmas

75. y'+sin(x+y)=sin(x-y) tenglamaning turini aniqlang

a) o‘zgaruvchilari ajraladigan

b) chiziqli
c) bir jinsli
d) Bernulli

76. xy'+y=0 tenglamaning turini aniqlang

a) oʻzgaruvchilari ajraladigan
b) chiziqli
c) bir jinsli
d) Bernulli

77. y'+y=0 tenglamaning turini aniqlang

a) oʻzgaruvchilari ajraladigan
b) chiziqli
c) bir jinsli
d) Bernulli

78. yy'=-2x/cosy tenglamaning turini aniqlang

a) oʻzgaruvchilari ajraladigan
b) chiziqli
c) bir jinsli
d) Bernulli

79. Bir jinsli tenglamani yechish uchun … almashtirish bajariladi

a) y = ux
b) y=uv
c) y=u+v
d) y=z'

80. y'-y/x=x+1 tenglamaning turini aniqlang

a) oʻzgaruvchilari ajraladigan
b) chiziqli
c) bir jinsli
d) Bernulli

Saqlash

Savollar va javoblar Qiyinlilik darajasi Shablondagi nomeri Ta'lim natijalari Tematik ta'lim natijalari

Differensial tenglamaning xususiy yechimini toping

$3y' + y = 0 \quad y(0) = 2$

1 1 1misol

$y = 2e^{-\frac{x}{3}}$

$y = 2 + x^3$

$y = 2e^{-3x}$

$y = 2e^{\frac{x}{3}}$

Differensial tenglamaning xususiy yechimini toping.

$3y' - y = 0 \quad y(0) = 2$

1 1. 2-misol

$y = 2e^{\frac{x}{3}}$

$y = 2 + x^3$

$y = 2e^{-3x}$

$y = 2e^{-\frac{x}{3}}$

3.Differensial tenglamaning xususiy yechimini toping

$\sqrt{y}dx - \sqrt{x}dy = 0$, $y(0) = 1$

1 1

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

$y = 2\sqrt{x} + 1$

$y = (x-1)^2$

$y = \frac{x+3}{3}$

4.Differensial tenglamaning xususiy yechimini toping

$y' = 4\sqrt{y}, \quad y(0) = 9$

1 1

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

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

$y = 2x+9$

$y = \frac{1}{9}(2x+9)^2$

5.Differensial tenglamaning xususiy yechimini toping

$y' = 4\sqrt{y}, \quad y(0) = 4$

1 1

$y = 4(x+1)^2$

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

$y = (x^2+2)^2$

$y = 4(2x+1)^2$

6.Differensial tenglamaning xususiy yechimini toping

$y' = 4x\sqrt{y}, \quad y(0) = 9$

1 1

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

$y = 9(x^2+1)^2$

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

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

7.Differensial tenglamaning xususiy yechimini toping

$y' = 4x\sqrt{y}, \quad y(0) = 1$

1 1

$y = (x^2+1)^2$

$y = (2x^2+1)^2$

$y = (2x+1)^2$

$y = \frac{1}{9}(x^2+3)^2$

8.Differensial tenglamaning xususiy yechimini toping

$xy' - y\ln y = 0, \; y(1) = e^2$

1 1

$y = e^{2x}$

$y = x \cdot e^2$

$y = e^{x+1}$

$y = x \cdot e^{2x}$

9.Differensial tenglamaning xususiy yechimini toping

$y' = xy, \quad y(0) = 4$

1 1

$y = 4e^{\frac{x^2}{2}}$

$y = e^{x^2} + 3$

$y = 4e^{2x}$

$y = e^{x} + 3$

10.Differensial tenglamaning umumiy yechimini toping

$y' = 5^{x-y}$

1 1

$y = \log_5 (C + 5^x)$

$y = 2\log_5 (x + C)$

$y = \log_5 x + C$

$y = \log_5 (x + 5^x) + C$

11.Differensial tenglamaning umumiy yechimini toping

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

1 1

$y = \log_3 (C + 3^x)$

$y = 2\log_3 (x + C)$

$y = \log_3 x + C$

$y = \log_3 (x + 3^x) + C$

12.Differensial tenglamaning umumiy yechimini toping

$y' = \frac{y+1}{x+1}$

1 1

$y = -1 + C(x + 1)$

$y = x + C$

$y = C(x+1)$

$y = 1 + C(x+1)$

13.Differensial tenglamaning umumiy yechimini toping

$y' + y = 5$

1 1

$y = 5 + Ce^{-x}$

$y = Ce^{-x} - 5$

$y = C(e^{-x} + 5x)$

$y = 5 + Ce^{x}$

14.Differensial tenglamaning xususiy yechimini toping

$\frac{dx}{4} + \frac{dy}{\sin x} = 0, \quad y(0) = -1$

1 1

$y = \frac{1}{4}\cos x - 1\frac{1}{4}$

$y = -\frac{1}{4}\cos x - \frac{3}{4}$

$y = \frac{1}{4}\sin x - 1$

$y = -\cos x$

15.Differensial tenglamaning xususiy yechimini toping

$\frac{dx}{4} + \frac{dy}{\sin x} = 0, \quad y(0) = 1$

1 1

$y = \frac{1}{4}\cos x + \frac{3}{4}$

$y=-\frac{1}{4}\cos x+1\frac{1}{4}$

$y=\frac{1}{4}\sin x+1$

$y=\cos x$

16.Differensial tenglamaning xususiy yechimini toping

$e^{y}y'+1=0$, $y(0)=\ln 2$

1 1

$y=\ln(2-x)$

$y=\ln(2+x)$

$y=\frac{1}{2}\ln(4-x)$

$y=\frac{1}{2}\ln(4+x)$

17.Differensial tenglamaning xususiy yechimini toping

$\frac{dx}{4}+\frac{dy}{\cos x}=0$, $y(0)=1$

1 1

$y=-\frac{1}{4}\sin x+1$

$y=\frac{1}{4}\sin x+1$

$y=-\frac{1}{4}cosx+\frac{1}{4}$

$y=1-\sin x$

18.Differensial tenglamaning xususiy yechimini toping

$(1-e^{2x})dx=e^{x}dy$, $y(0)=-1$

1 1

$y = 1 - e^{-x} - e^{x}$

$y = -1 + e^{-x} - e^{x}$

$y = -1 - e^{-x} + e^{x}$

$y = -1 + xe^{2x}$

19.Differensial tenglamaning xususiy yechimini toping

$(1 + e^{2x})dx = e^{x}dy,\ y(0) = -1$

1 1

$y = -1 - e^{-x} + e^{x}$

$y = -1 + e^{-x} - e^{x}$

$y = 1 - e^{-x} - e^{x}$

$y = -1 + xe^{2x}$

20.Differensial tenglamaning xususiy yechimini toping

$(1 + e^{2x})dx = e^{x}dy,\ y(0) = 1$

1 1

$y = 1 - e^{-x} + e^{x}$

$y = 1 + e^{-x} - e^{x}$

$y = -1 + e^{-x} + e^{x}$

$y = 1 + xe^{2x}$

21.Erkli o‘zgaruvchi, noma’lum funksiya va uning hosilalari yoki differensiallarini bog‘lovchi tenglamaga … deyiladi.

1 2

differensial tenglama

umumiy yechim

xususiy yechim

tartibi

22.Agar noma’lum funksiya faqat bitta o‘zgaruvchiga bog‘liq bo‘lsa, bunday differensial tenglamaga … differensial tenglama deyiladi

1 2

oddiy

tartibli

umumiy yechimli

xususiy yechimli

23.Agar noma’lum funksiya ikki yoki undan ortiq o‘zgaruvchiga bog‘liq bo‘lsa, bunday differensial tenglamaga …differensial tenglama deyiladi.

1 2

xususiy hosilali

oddiy

yuqori tartibli

o‘zgaruvchan

24.Differensial tenglamada qatnashgan hosilalarning eng yuqori tartibi tenglamaning … deyiladi.

1 2

tartibi

xususiy yechimi

chegarasi

umumiy yechimli

25.Birinchi tartibli differensial tenglamani to‘g‘ri tenglikka aylantiruvchi $y = \varphi(x, C)$

funksiyaga tenglamaning … deyiladi.

1 2

umumiy yechimi

hususiy yechimi

tartibi

chegarasi

26.Quyidagilardan qaysi biri birinchi tartibli differensial tenglama uchun Koshi

masalasi? 1 2

$$\begin{cases} y' = f(x,y) \\ y|_{x=x_0} = y_0 \end{cases}$$

$$\begin{cases} y' = f(x,y) \\ y = \varphi(x) \end{cases}$$

$$\begin{cases} y' = f(x,y) \\ y(a) = A; y(b) = B \end{cases}$$

$$\begin{cases} y' = f(x,y) \\ a < x < b \end{cases}$$

27.Tenglamaning tipini aniqlang:

$y' = f_1(x) f_2(y)$

1 2

O‘zgaruvchilari ajraladigan

Chiziqli

Bir jinsli

Bernulli

28.Chiziqli differensial tenglamani qaysi usulda

yechiladi?1 2

Bernulli

Gauss

Kramer

Nyuton

29.Chiziqli differensial tenglamani qaysi usulda

yechiladi?1 2

Lagranj

Kramer

Gauss

Nyuton

$f(x,y)$ 30.funksiya qachon k tartibli bir jinsli funksiya deyiladi?

1 2

$f(\lambda x, \lambda y) = \lambda^k f(x,y)$

$f(\lambda x, \lambda y) = \lambda f(x,y)$

$f(\lambda x, \lambda y) = k^\lambda f(x,y)$

$f(\lambda x, \lambda y) = (\lambda k) f(x,y)$

$y' + P(x)y = Q(x)$

1 2 31.tenglamanini yechishning Bernulli usulida qanday almashtirish bajariladi?

$y = uv$

$y = p'$

$y = \varphi(x)$

$y' = pp'$

$y' + P(x)y = Q(x)$

1 2 32.tenglamanini yechishning Lagranj usulida umumiy yechim … ko`rinishda izlanadi

$y = C(x)e^{-\int P(x)dx}$

$y = C(x)e^{\int P(x)dx}$

$y = C(x)e^{P(x)}$

$y = e^{-\int P(x)dx}$

33.Agar birinchi tartibli $y' = f(x, y)$ differensial tenglamaning o‘ng tomoni x va y ga nisbatan …bir jinsli funksiya bo‘lsa, bunday tenglama bir jinsli DT deyiladi.

1 2

nol o‘lchovli

chiziqli

uzluksiz

xususiy yechimli

34.Quyidagilarni qaysi biri 1-tartibli chiziqli differensial tenglamaning umumiy ko‘

rinishi?1 2

$y' + P(x)y = Q(x)$

$y' + P(x)y = Q(y)$

$y' + P(x)y = Q(x)y^n$

$y' + P(y)x = 0$

$y' = \dfrac{a_1x + b_1y + c_1}{a_2x + b_2y + c_2}$ 35.tenglama qachon bir jinsli differensial tenglamaga keladi?

1 2

$\begin{vmatrix} a_1 & b_1 \\ a_2 & b_2 \end{vmatrix} \neq 0$

$\begin{vmatrix} a_1 & b_1 \\ a_2 & b_2 \end{vmatrix} = 0$

$$\begin{vmatrix} c_1 & b_1 \\ c_2 & b_2 \end{vmatrix} \neq 0$$

$$\begin{vmatrix} a_1 & c_1 \\ a_2 & c_2 \end{vmatrix} \neq 0$$

36.Ushbu $y' + P(x)y = 0$ tenglama … DT bo‘ladi.

1 2

chiziqli bir jinsli

Rikatti

to‘la differensial

Bernulli

37.Bernuli tenglamasini

aniqlang.1 2

$y' + P(x)y = Q(x)y^n$

$y' + P(x)y = Q(x)$

$y = xy' + \psi(y')$

$y = x\varphi(y') + \psi(y')$

38.Lagranj tenglamasini

aniqlang 1 2

$y = x\varphi(y') + \psi(y')$

$y' + P(x)y = Q(x)y^n$

$y' + P(x)y = Q(x)$

$y = xy' + \psi(y')$

39.Klero tenglamasini

aniqlang 1 2

$y = xy' + \psi(y')$

$y = x\varphi(y') + \psi(y')$

$y' + P(x)y = Q(x)y^n$

$y' + P(x)y = Q(x)$

40.Bernulli tenglamasi qaysi almashtirish yordamida chiziqliga

keltiriladi?1 2

$z = y^{-n+1}$,
$z' = (-n+1)y^{-n}y'$

$y = uv$

$y = e^{kx}$

$y = p'$, $y'' = pp'$

41.Ushbu $y' = \dfrac{x+y+3}{x+2}$ tenglamani bir jinsliga keltirish uchun qanday almashtirish bajariladi?

1 3

$\begin{cases} x = x_1 - 2 \\ y = y_1 - 1 \end{cases}$

$\begin{cases} x = x_1 + 2 \\ y = y_1 + 1 \end{cases}$

$\begin{cases} x = x_1 + 2 \\ y = y_1 - 1 \end{cases}$

$\begin{cases} x = x_1 - 2 \\ y = y_1 + 1 \end{cases}$

42.Ushbu $y' = \dfrac{2x+3y-1}{x+y}$ tenglamani bir jinsliga keltirish uchun qanday almashtirish bajariladi?

1 3

$\begin{cases} x = x_1 - 1 \\ y = y_1 + 1 \end{cases}$

$$\begin{cases} x = x_1 + 1 \\ y = y_1 - 1 \end{cases}$$

$$\begin{cases} x = x_1 - 1 \\ y = y_1 - 1 \end{cases}$$

$$\begin{cases} x = x_1 + 1 \\ y = y_1 + 1 \end{cases}$$

43.Quyidagilarni qaysi biri bir jinsli differnsial tenglamaga keltiriladigan

tenglama?1 3

$$y' = \frac{2x + y + 1}{2x + 3y - 1}$$

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

$$y' = \frac{5 - 4x - 2y}{3 + x + 2y}$$

$$y' = \frac{2y}{x^2 + 1}$$

44.Ushbu $y' = \frac{2x + y - 2}{x - 2}$ tenglamani bir jinsliga keltirish uchun qanday almashtirish bajariladi?

1 3

$$\begin{cases} x = x_1 + 2 \\ y = y_1 - 2 \end{cases}$$

$$\begin{cases} x = x_1 + 2 \\ y = y_1 + 2 \end{cases}$$

$$\begin{cases} x = x_1 - 2 \\ y = y_1 - 2 \end{cases}$$

$$\begin{cases} x = x_1 - 2 \\ y = y_1 + 2 \end{cases}$$

45.Qaysi almashtirish ushbu $y' = \dfrac{x+y+1}{2x+2y}$ tenglamani o‘zgaruvchilari ajraladigan tenglamaga keltiradi?

1 3

$x + y + 1 = u$

$x + y + 1 = xu$

$y = ux - 1$

$y = ux + 1$

46.Ushbu $y' = \dfrac{x-2y+1}{y-1}$ tenglamani bir jinsliga keltirish uchun qanday almashtirish bajariladi?

1 3

$$\begin{cases} x = x_1 + 1 \\ y = y_1 + 1 \end{cases}$$

$$\begin{cases} x = x_1 - 1 \\ y = y_1 + 1 \end{cases}$$

$$\begin{cases} x = x_1 + 1 \\ y = y_1 - 1 \end{cases}$$

$$\begin{cases} x = x_1 - 1 \\ y = y_1 - 1 \end{cases}$$

47.Ushbu $y' = \dfrac{x+y-3}{x-2y}$ tenglamani bir jinsliga keltirish uchun qanday almashtirish bajariladi?

1 3

$$\begin{cases} x = x_1 + 2 \\ y = y_1 + 1 \end{cases}$$

$$\begin{cases} x = x_1 - 2 \\ y = y_1 + 1 \end{cases}$$

$$\begin{cases} x = x_1 + 2 \\ y = y_1 - 1 \end{cases}$$

$$\begin{cases} x = x_1 - 2 \\ y = y_1 - 1 \end{cases}$$

48.Quyidagilarni qaysi biri bir jinsli differnsial tenglamaga keltiriladigan

tenglama?1 3

$$y' = \frac{2x - y - 5}{x + 2y}$$

$$y' = \sin(x + y)$$

$$y' = \frac{2 - 3x - 3y}{3 + x + y}$$

$$y' = \frac{y}{x^2 + 1}$$

49.Ushbu $y' = \dfrac{x - 5y + 4}{x - y}$ tenglamani bir jinsliga keltirish uchun qanday almashtirish bajariladi?

1 3

$$\begin{cases} x = x_1 + 1 \\ y = y_1 + 1 \end{cases}$$

$$\begin{cases} x = x_1 - 1 \\ y = y_1 + 1 \end{cases}$$

$$\begin{cases} x = x_1 + 1 \\ y = y_1 - 1 \end{cases}$$

$$\begin{cases} x = x_1 - 1 \\ y = y_1 - 1 \end{cases}$$

50.Qaysi almashtirish ushbu $y' = \dfrac{3x+3y-1}{x+y-1}$ tenglamani o‘zgaruvchilari ajraladigan tenglamaga keltiradi?

1 3

$x + y - 1 = u$

$x + y - 1 = xu$

$y = ux + 1$

$y = ux - 1$

51.Ushbu $\begin{cases} x = x_1 + 1 \\ y = y_1 + 1 \end{cases}$ almashtirish yordamida qaysi tenglama bir jinsliga keltiriladi?

1 3

$$y' = \frac{x-5y+4}{x-y}$$

$$y' = \frac{2x-y-5}{x+2y}$$

$$y' = \frac{2-3x-3y}{3+x+y}$$

$$y' = \frac{x+y-3}{x-2y}$$

52.Ushbu $\begin{cases} x = x_1 + 2 \\ y = y_1 + 1 \end{cases}$ almashtirish yordamida qaysi tenglama bir jinsliga keltiriladi?

1 3

$$y' = \frac{x + y - 3}{x - 2y}$$

$$y' = \frac{x - 5y + 4}{x - y}$$

$$y' = \frac{2x - y - 5}{x + 2y}$$

$$y' = \frac{2 - 3x - 3y}{3 + x + y}$$

53.Ushbu $\begin{cases} x = x_1 - 1 \\ y = y_1 - 1 \end{cases}$ almashtirish yordamida qaysi tenglama bir jinsliga keltiriladi?

1 3

$$y' = \frac{x + 2y + 3}{x - 2y - 1}$$

$$y' = \frac{x + y - 3}{x - 2y}$$

$$y' = \frac{x - 5y + 4}{x - y}$$

$$y' = \frac{2x - y - 5}{x + 2y}$$

54.Ushbu $\begin{cases} x = x_1 + 2 \\ y = y_1 - 2 \end{cases}$ almashtirish yordamida qaysi tenglama bir jinsliga keltiriladi?

1 3

$$y' = \frac{2x + y - 2}{x - 2}$$

$$y' = \frac{x + 2y + 3}{x - 2y - 1}$$

$$y' = \frac{x + y - 3}{x - 2y}$$

$$y' = \frac{2x - y - 5}{x + 2y}$$

55.Ushbu $\begin{cases} x = x_1 - 2 \\ y = y_1 + 1 \end{cases}$ almashtirish yordamida qaysi tenglama bir jinsliga keltiriladi?

1 3

$$y' = \frac{x + 2y}{x + y + 1}$$

$$y' = \frac{2x + y - 2}{x - 2}$$

$$y' = \frac{x + y - 3}{x - 2y}$$

$$y' = \frac{2x - y - 5}{x + 2y}$$

56.Ushbu $\begin{cases} x = x_1 + 2 \\ y = y_1 - 1 \end{cases}$ almashtirish yordamida qaysi tenglama bir jinsliga keltiriladi?

1 3

$$y' = \frac{2x - y - 5}{x + 2y}$$

$$y' = \frac{x + 2y}{x + y + 1}$$

$$y' = \frac{2x+y-2}{x-2}$$

$$y' = \frac{x+y-3}{x-2y}$$

57.Ushbu $\begin{cases} x = x_1 - 2 \\ y = y_1 + 3 \end{cases}$ almashtirish yordamida qaysi tenglama bir jinsliga keltiriladi?

1 3

$$y' = \frac{2x+y+1}{3x+2y}$$

$$y' = \frac{x+2y}{x+y+1}$$

$$y' = \frac{2x-y-5}{x+2y}$$

$$y' = \frac{x+y-1}{2x+y-4}$$

58.Ushbu $\begin{cases} x = x_1 + 3 \\ y = y_1 - 2 \end{cases}$ almashtirish yordamida qaysi tenglama bir jinsliga keltiriladi?

1 3

$$y' = \frac{x+y-1}{2x+y-4}$$

$$y' = \frac{2x+y+1}{3x+2y}$$

$$y' = \frac{x+2y}{x+y+1}$$

$$y' = \frac{2x - y - 5}{x + 2y}$$

59.Ushbu $\begin{cases} x = x_1 + 2 \\ y = y_1 + 2 \end{cases}$ almashtirish yordamida qaysi tenglama bir jinsliga keltiriladi?

1 3

$$y' = \frac{2x - y - 2}{x + y - 4}$$

$$y' = \frac{x + y - 1}{2x + y - 4}$$

$$y' = \frac{3x + y + 8}{x + 2y + 6}$$

$$y' = \frac{x + 2y}{x + y + 1}$$

60.Ushbu $\begin{cases} x = x_1 - 2 \\ y = y_1 - 1 \end{cases}$ almashtirish yordamida qaysi tenglama bir jinsliga keltiriladi?

1 3

$$y' = \frac{x + y + 3}{x + 2y + 4}$$

$$y' = \frac{x + y - 1}{2x + y - 4}$$

$$y' = \frac{3x + y + 8}{x + 2y + 6}$$

$$y' = \frac{x + y - 3}{x - 2y}$$

61.Asl funksiyaning tasvirini toping

$$e^{3t}cos5t$$

1 4

$$\frac{p-3}{(p-3)^2+5^2}$$

$$\frac{p-5}{(p-5)^2+2^2}$$

$$\frac{p-2}{(p-5)^2+2^2}$$

$$\frac{p-5}{(p-2)^2+5^2}$$

62.Asl funksiyaning tasvirini toping

$$t+e^{2t}sin5t.$$

1 4

$$\frac{1}{p^2}+\frac{5}{(p-2)^2+5^2}$$

$$\frac{p-2}{(p-2)^2+5^2}$$

$$\frac{1}{p}+\frac{p}{p^2+5^2}$$

$$\frac{1}{p^2}+\frac{p}{p^2+5^2}$$

63.Asl funksiyaning tasvirini toping

$$t+cos5t.$$

1 4

$\frac{1}{p^2} + \frac{p}{p^2+5^2}$

$\frac{1}{p^2} + \frac{p-5}{(p-5)^2+2^2}$

$\frac{1}{p^2} + \frac{p-5}{(p-5)+2}$

$\frac{1}{p^2} + \frac{p-2}{(p-2)^5+2^5}$

64.Asl funksiyaning tasvirini toping

$t^3 + 2e^{-2t} + 3t^2$.

1 4

$\frac{6}{p^4} + \frac{2}{p+2} + \frac{6}{p^3}$

$\frac{1}{p^4} + \frac{1}{p+2} + \frac{2}{p^3}$

$\frac{1}{p^4} + \frac{4}{p+2} + \frac{2}{p^3}$

$\frac{1}{p^4} + \frac{3}{p+2} + \frac{2}{p^3}$

65.Asl funksiyaning tasvirini toping

$t + 3e^{-2t} + t^2$

1 4

$\frac{1}{p^2} + \frac{3}{p+2} + \frac{2}{p^3}$

$\frac{6}{p^4} + \frac{2}{p+2} + \frac{6}{p^3}$

$$\frac{1}{p^4}+\frac{1}{p+2}+\frac{2}{p^3}$$

$$\frac{1}{p^2}+\frac{6}{p^4}+\frac{2}{p+2}$$

66.Asl funksiyaning tasvirini toping

$$e^t+3cos3t-sin8t.$$

1 4

$$\frac{1}{p-1}+\frac{3p}{p^2+9}-\frac{8}{p^2+64}$$

$$\frac{1}{p^2-1}+\frac{1}{p-1}-\frac{8}{p^3+64}$$

$$\frac{1}{p^2-1}+\frac{1}{p-1}-\frac{8}{p^3+8}$$

$$\frac{1}{p^4}+\frac{3}{p+2}-\frac{8}{p^3+16}$$

67.Asl funksiyaning tasvirini toping

$$t+2sin4t+cost.$$

1 4

$$\frac{1}{p^2}+\frac{8}{p^2+4^2}+\frac{p}{p^2+1^2}$$

$$\frac{1}{p^2}+\frac{4}{p^2+4^2}+\frac{p+1}{p^2+1^2}$$

$$\frac{1}{p^2}+\frac{8}{p^2+4^2}+\frac{p+1}{p^2+1^2}$$

$$\frac{1}{p^2}+\frac{8}{p^2+4^2}+\frac{p+2}{p^2+12^2}$$

68.Asl funksiyaning tasvirini toping

$t^2 + t^2 e^{2t}$.

1 4

$\frac{2}{p^3} + \frac{2}{(p-2)^3}$

$\frac{2}{p+2} + \frac{6}{p^3}$

$\frac{2}{p^3} + \frac{2}{(p+2)^3}$

$\frac{1}{p^4} + \frac{2}{p^2}$

69.Asl funksiyaning tasvirini toping

$e^{-2t} + 3t$.

1 4

$\frac{1}{p+2} + \frac{3}{p^2}$

$\frac{2}{p+2} + \frac{6}{p^3}$

$\frac{3}{p+3} + \frac{2}{p^3}$

$\frac{1}{p^4} + \frac{3}{p+2} + \frac{2}{p^3}$

70.Asl funksiyaning tasvirini toping

$t^3 + 2e^{-2t} sint$.

1 4

$\frac{6}{p^4} + \frac{2}{(p+2)^2+1^2}$

$\frac{6}{p^2}+\frac{2}{(p-2)^2+1^2}$

$\frac{2}{(p+2)^2+1^2}+\frac{2}{p^3}$

$\frac{3}{p+2}+\frac{2}{(p+2)^2+1^2}$

71.Tasvirga qanday asl funksiya mos keladi

$\frac{1}{p^2-5p+6}$

1 4

$e^{3t}-e^{2t}$

$2e^{3t}-e^{5t}$

$e^{4t}-e^{3t}$

$\frac{e^{3t}-e^{2t}}{3}$

72.Tasvirga qanday asl funksiya mos keladi

$\frac{1}{(p-3)(p-5)}+\frac{2}{p^2+4}$

1 4

$\frac{e^{5t}}{2}-\frac{e^{3t}}{2}+sin2t$

$e^{3t}-e^{5t}+sin2t$

$\frac{e^{5t}}{2}-\frac{e^{3t}}{2}+cos2t$

$\frac{e^{5t}}{2}+\frac{e^{3t}}{2}+sin2t$

73.Tasvirga qanday asl funksiya mos keladi

$\frac{1}{p^2-5p+6}+\frac{p}{p^2+4}$.

1 4

$e^{3t}-e^{2t}+cos2t;$

$\frac{e^{5t}}{2}-\frac{e^{2t}}{2}+sin2t$

$\frac{e^{3t}-e^{2t}}{3}+cos2t$

$e^{4t}-e^{3t}+cos2t;$

74.Tasvirga qanday asl funksiya mos keladi

$\frac{1}{(p-2)^2+1}$.

1 4

$e^{2t}sint$

$e^{t}cost$

$-e^{t}sin2t$

$te^{4t}+cost$

75.Tasvirga qanday asl funksiya mos keladi

$\frac{p+4}{(p+4)^2+4}+\frac{2}{p-2}$

1 4

$e^{-4t}cos2t + 2e^{2t}$

$e^{-4t}cos2t + sin2t;$

$2e^{3t} - e^{5t}cos2t;$

$e^{-4t}cos2t + 2e^{3t}$

76.Tasvirga qanday asl funksiya mos keladi

$\frac{p-2}{(p-2)^2+1}$.

1 4

$e^{2t}cos2t$

$e^{2t}sint$

$e^{2t}cos2t$

$\frac{e^{2t}}{2}sin2t$;

77.Tasvirga qanday asl funksiya mos keladi

$\frac{3}{p^2+9} - \frac{6}{p^4} + \frac{p}{p^2+4}$.

1 4

$sin3t - t^3 + cos2t;$

$sin3t - cos2t + t^2;$

$cost - \frac{e^{4t}}{2} + sin3t$

$e^{3t} - t^2 + cos2t;$

78.Tasvirga qanday asl funksiya mos keladi

$\frac{p-2}{(p-2)^2+9}+\frac{2}{p^3}-\frac{2}{p-6}$.

1 4

$e^{2t}cos3t+t^2-2e^{6t}$

$e^{2t}cos3t+t^4-2e^{6t}$;

$-t^4+cos3t+2e^{6t}$

$e^{2t}cos3t+t^4-tsint$

79.Tasvirga qanday asl funksiya mos keladi

$\frac{p^2-4}{(p^2+4)^2}$.

1 4

$tcos2t$;

$tsin2t$;

$tcost$;

$2tcos2t$

80.Tasvirga qanday asl funksiya mos keladi

$\frac{2p}{(p^2+1)^2}-\frac{2p}{p^2-16}$.

1 4

$tsint-2ch4t$;

$tcost+sint$

$sint-2ch4t$

$tsint - \mathrm{sh}2t;$

81. $F\left(x, y^{(k)}, y^{(k+1)}, \ldots, y^{(n)}\right) = 0$ tenglama tartibini pasaytirganda hosil bo`lgan tenglamaning tartibini

aniqlang

1 5

$n-k$

$n^2$

$k$

$n-k^2$

82. $F\left(x, y^{(k)}, y^{(k+1)}, \ldots, y^{(n)}\right) = 0$ tenglamaning tartibini pasaytirish uchun qanday almashtirish bajariladi?

1 5

$z = y^{(k)},\ z' = y^{(k+1)}\ , \ldots,$
$z^{(n-k)} = y^{(n)}$ almashtirish bajariladi

$z = y'$
almashtirish
bajariladi

$z = y' + 1$
almashtirish bajariladi

$z^2 = y'$ almashtirish
bajariladi

83.Agar n - tartibli differensial tenglamada … 1–darajada qatnashsa, bunday tenglama yuqori tartibli chiziqli differensial tenglama deyiladi.

1 5

noma’lum funksiya va uning hosilalari

noma’lum funksiya

noma’lum funksiyaning hosilalari

noma’lum funksiya qatnashmagan hadi

84 Agar differensial tenglamalar sistemasi ikki noma‘lumli normal sistema bo‘lsa, uning umumiy yechimining ko‘rinishini aniqlang.

1 5

$$\begin{cases} y = \varphi_1(x, C_1, C_2) \\ z = \varphi_2(x, C_1, C_2) \end{cases}$$

$$\begin{cases} y = \varphi_1(x, z, C_1, C_2) \\ z = \varphi_2(x, y, C_1, C_2) \end{cases}$$

$$\begin{cases} y = \varphi_1(x, C_1) \\ z = \varphi_2(x, C_2) \end{cases}$$

$$\begin{cases} y = \varphi_1(x, z, C_1) \\ z = \varphi_2(x, y, C_2) \end{cases}$$

85Agar bir vaqtda nolga teng bo‘lmagan n ta $\alpha_1, \alpha_2, \dots, \alpha_n$ sonlar mavjud bo‘lib,

$\alpha_1 \cdot y_1 + \alpha_2 \cdot y_2 + \cdots + \alpha_n \cdot y_n = 0$ ayniy munosabat bajarilsa, [a,b] kesmada aniqlangan va uzluksiz

$y_1, y_2, \dots, y_n$ funksiyalar sistemasi … deyiladi.

1 5

chiziqli bog‘liq

chiziqli erkli

fundamental sistema

ortogonal

86Agar $y_1, y_2, y_3, \dots, y_n$ funksiyalar sistemasi chiziqli bog‘liq bo‘lsa, bu sistemaning Vronskiy determinanti

$W(x)$ funksiya aniqlangan barcha nuqtalarida … bo‘ladi.

1 5

aynan nolga teng

noldan farqli

musbat aniqlangan

manfiy aniqlangan

88.Agar $y_1, y_2, y_3, \ldots, y_n$ funksiyalar chiziqli erkli va chiziqli bir jinsli DT ning yechimlari bo‘lsa, u holda bu funksiyalarning Vronskiy determinanti tenglamaning koeffitsiyentlari aniqlangan sohaning …

1 5

hech bir nuqtasida nolga teng bo‘lmaydi.

biror nuqtasida noldan farqli bo‘ladi.

biror nuqtasida nolga teng bo‘ladi.

barcha nuqtasida nolga teng bo‘ladi.

89.Quyidagi $y'' + p(x)y' + q(x)y = 0$ tenglamaga … deyiladi

1 5

Ikkinchi tartibli chiziqli bir jinsli differensial tenglama

Ikkinchi tartibli o‘zgarmas koeffitsientli chiziqli bir jinsli bo‘lmagan differensial tenglama

Ikkinchi tartibli o‘zgarmas koeffitsientli differensial tenglama

Ikkinchi tartibli chiziqli bir jinsli bo‘lmagan differensial tenglama

90.Quyidagi $y'' + p(x)y' + q(x)y$ tenglamaga … deyiladi $(f(x) \neq 0)$

1 5

Ikkinchi tartibli chiziqli bir jinsli bo‘lmagan differensial tenglama

Ikkinchi tartibli o‘zgarmas koeffitsientli chiziqli bir jinsli bo‘lmagan differensial tenglama

Ikkinchi tartibli bir jinsli differensial tenglama

Ikkinchi tartibli chiziqli bir jinsli differensial tenglama

91 $F(y, y', y'') = 0$ tenglamaning tartibini pasaytirish uchun qanday almashtirish bajariladi?

1 5

$$y' = p,\ y'' = p\frac{dp}{dy}, \ldots,$$

$$p = y''$$

$$p = y' + y$$

$$p^k = y'$$

92.Laplas almashtirishini

aniqlang:1 5

$$F(\mathrm{p}) \doteq \int_0^\infty e^{-pt} f(\mathrm{t})\,dt$$

$$F(\mathrm{p}) \doteq \int_p^\infty e^{pt} f(\mathrm{t})\,dt$$

$$F(\mathrm{p}) \doteq \int_{-\infty}^\infty e^{-pt} f(\mathrm{t})\,dt$$

$$F(\mathrm{p}) \doteq \int_{-p}^\infty e^{-pt} f(\mathrm{t})\,dt$$

93.O’xshashlik teoremasini

aniqlang:1 5

$$f(\alpha\,\mathrm{t}) \leftarrow\!\div\!- \frac{1}{\alpha} F\left(\frac{p}{\alpha}\right)$$

$$f(\alpha\,\mathrm{t}) \leftarrow\!\div\!- -\frac{1}{\alpha} F(p)$$

$$f(\mathrm{t}) \leftarrow\!\div\!- \frac{1}{\alpha} F\left(\frac{p}{\alpha}\right)$$

$$f(\alpha\,\mathrm{t}) \leftarrow\!\div\!- F\left(\frac{p}{\alpha}\right)$$

94.Tasvirning siljish teoremasini

aniqlang:1 5

$$e^{\alpha t} f(\mathrm{t}) \leftarrow\!\div\!- F(p-\alpha)$$

$$e^{\alpha t} f(\mathrm{t}) \leftarrow\!\div\!- F(\mathrm{p}+\alpha)$$

$$e^{-\alpha t} f(\mathrm{t}) \leftarrow\!\div\!- F(p-\alpha)$$

$e^{\alpha t} f(\mathrm{t}) \leftarrow\!\!\div\!\!- \; -F(p-\alpha)$

95.Kechikish teoremasini

aniqlang.1 5

$f(t-t_0) \leftarrow\!\!\div\!\!- e^{-pt_0} F(p)$

$f(\alpha \mathrm{t}) \leftarrow\!\!\div\!\!- \frac{1}{\alpha} F\left(\frac{p}{\alpha}\right)$

$e^{\alpha t} f(\mathrm{t}) \leftarrow\!\!\div\!\!- F(p-\alpha)$

$e^{\alpha t} f(t) \leftarrow\!\!\div\!\!- F(p+\alpha)$

96.Quyidagi tenglamalardan qaysi birini tartibini pasaytirib bo`

lmaydi?1 5

$y'' - 2y' - 3y = xe^{4x}$

$xy'' = y' \ln \frac{y'}{x}$

$y'''(x-1) - y'' = 0$

$1 + y'^2 = y\,y''$

97.Quyidagilardan qaysi biri o`ng tomoni maxsus ko`rinishda bo`lgan differensial tenglama

emas?1 5

$y'' + 4y = 4\sec 2x$

$y'' + 9y = 3ch3x$

$y'' + y = \frac{\sin x}{e^x}$

$y''' - y' = 2e^x + \sin x.$

98.Quyidagilardan qaysi biri o`ng tomoni maxsus ko`rinishda bo`lgan differensial tenglama

emas?1 5

$$y'' - 2y' + y = xe^{x^2}$$

$$y''' - y' = 2e^x + \cos x.$$

$$y'' + 2y' = 2\operatorname{sh} 2x.$$

$$y'' + y = \frac{\sin x}{e^x}$$

99.Quyidagilardan qaysi biri o`ng tomoni maxsus ko`rinishda bo`lgan differensial tenglama?1 5

$$y'' - 2y' + y = \frac{x}{e^x}$$

$$y'' + 2y' + y = \frac{e^x}{x}$$

$$y'' + 2y = \sec x$$

$$y'' - 2y' + y = \frac{1}{xe^x}$$

100.Quyidagilardan qaysi biri chiziqli bir jinsli bo‘lmagan differensial tenglamalar sistemasi?1 5

$$\begin{cases} x' = 2x + y \\ y' = 3x - 4e^t \end{cases}$$

$$\begin{cases} x' = 2x + y \\ y' = 3x \end{cases}$$

$$\begin{cases} x' = 2x + y \\ y' = 3x + 4y \end{cases}$$

$$\begin{cases} x' = y - 2x \\ y' = 3x \end{cases}$$

101.Quyidagilardan qaysi biri chiziqli bir jinsli differensial tenglamalar sistemasi?1 5

$$\begin{cases} x' = 2x + y \\ y' = 3x + 4y \end{cases}$$

$$\begin{cases} x' = -2x + y \\ y' = 3x - 6e^{-2t} \end{cases}$$

$$\begin{cases} x' = -y + 1 \\ y' = x - 2, \end{cases}$$

$$\begin{cases} x' = 2x + y \\ y' = 3x - 4e^{t} \end{cases}$$

102.Differensial tenglamaning umumiy yechimini toping

$$y'' - 10y' + 25y = 0$$

1 6

$$y = (C_1 + C_2x)e^{5x}$$

$$y = (C_1 + C_2)e^{5x}$$

$$y = (C_1x + C_2x)e^{5x}$$

$$y = (C_1 + C_2x)e^{5}$$

103.Differensial tenglamaning umumiy yechimini toping

$$y'' + y = 0$$

1 6

$$y = C_1 \cos x + C_2 \sin x$$

$$y = C_1 \cos y + C_2 \sin y$$

$$y = C\cos x + \sin x$$

$$y = Ce^{x}(\cos x + \sin x)$$

104.Differensial tenglamaning umumiy yechimini toping

$$y'' + 2y' = 0$$

1 6

$$y = C_1 + C_2 e^{-2x}$$

$$y = Ce^{-2x}$$

$$y = Ce^{2x}$$

$$y = C_1 + C_2 e^{2x}$$

105.Differensial tenglamaning umumiy yechimini toping

$$y'' - y' + y = 0$$

1 6

$$y = e^{\frac{x}{2}}(C_1 \cos\frac{\sqrt{3}}{2}x + C_2 \sin\frac{\sqrt{3}}{2}x)$$

$$y = C_1 \cos\frac{\sqrt{3}}{2}x + C_2 \sin\frac{\sqrt{3}}{2}x$$

$$y = e^{\frac{x}{2}}(C_1 \cos x + C_2 \sin x)$$

$$y = e^{\frac{3}{2}x}(C_1 \cos\frac{1}{2}x + C_2 \sin\frac{1}{2}x)$$

106.Differensial tenglamani yeching

$$y'' - 4y' + 8y = 0$$

1 6

$$y=e^{2x}(c_1\cos 2x+c_2\sin 2x)$$

$$y=c_1e^{2x}\cdot c_2e^{-2x}$$

$$y=e^{-2x}(c_1\cos 2x+c_2\sin 2x)$$

$$y=c_1e^{-2x}\cdot c_2e^{x}$$

107.Differensial tenglamani yeching

$$y'''-y''-9y'+9y=0$$

1 6

$$y=c_1e^{x}+c_2e^{3x}+c_3e^{-3x}$$

$$y=c_1e^{3x}+c_2e^{-3x}$$

$$y=c_1e^{x}+c_2e^{3x}+c_3e^{x}$$

$$y=c_1e^{x}+c_2e^{-3x}+c_3e^{-3x}$$

108.Differensial tenglamani yeching

$$y''-4y+4y=0$$

1 6

$$y=e^{2x}c_1+e^{2x}xc_2$$

$$y = e^x c_1 + e^x c_2$$

$$y = e^x c_1 + e^{-x} c_2$$

$$y = xe^x c_1 + e^x c_2$$

109.Differensial tenglamani yeching

$$y'' + 2y' = 0$$

1 6

$$y = c_1 + e^{-2x} c_2$$

$$y = e^x c_1 + e^{-x} c_2$$

$$y = e^x c_1 + e^{-2x} c_2$$

$$y = c_1 + e^{2x} c_2$$

110.Differensial tenglamani yeching

$$y'' + 2y' + 5y = 0$$

1 6

$$y = e^{-x}(c_1 \cos 2x + c_2 \sin 2x)$$

$$y = e^{-x}(c_1 \cos 2x + c_2 \cos 2x)$$

$$y = e^{x}(c_1 \cos 3x + c_2 \cos 3x)$$

$$y = e^{x}(c_1 \cos 2x + c_2 \sin 2x)$$

111.Differensial tenglamani yeching

$$y'' - 4y' + 8y = 0$$

1 6

$$y = e^{2x}(c_1 \cos 2x + c_2 \sin 2x)$$

$$y = e^{x}(c_1 \cos 2x + c_2 \sin 2x)$$

$$y = e^{-2x}(c_1 \cos 2x + c_2 \sin 2x)$$

$$y = e^{-x}(c_1 \cos 2x + c_2 \sin 2x)$$

112.Differensial tenglamani yeching

$$y'' + 6y' = 0$$

1 6

$$y = c_1 + e^{-6x} c_2$$

$$y = c_1 + e^{6x} c_2$$

$$y = xc_1 + e^{-6x} c_2$$

$$y = c_1 e^{-6x} + e^{-6x} c_2$$

113.Differensial tenglamani yeching

$$y''' - y'' - y' + y = 0$$

1 6

$$y = c_1 e^x + e^x c_2 x + c_3 e^{-x}$$

$$y = (c_1 + c_2 x)e^{-x} + c_3 e^{-x}$$

$$y = (c_1 + c_2 x)e^{x} + c_3 e^{2x}$$

$$y = (c_1 + c_2 x)e^{-x} + c_3 e^{2x}$$

114.Differensial tenglamani yeching

$$y'' + 4y = 0$$

1 6

$$y = c_1 \cos 2x + c_2 \sin 2x$$

$$y = e^x (\cos 2x + \sin 2x)$$

$$y = e^x (c_1 \cos 2x + c_2 \sin 2x)$$

$$y = e^{-x} (c_1 \cos 2x + c_2 \sin 2x)$$

115.Differensial tenglamani yeching

$$y'' + 6y' + 9y = 0$$

1 6

$$y = (c_1 + c_2 x)e^{-3x}$$

$$y = (c_1 + c_2)e^{-3x}$$

$$y = c_1 e^{x} + e^{-3x} c_2$$

$$y = (c_1 + c_2 x^2)e^{-3x}$$

116 $y(0)=0$ va $y'(0)=-6$ boshlang'ich shartlar bilan berilgan

$$y'' - 2y' - 8y = 0$$

differensial tenglamani yeching.

1 6

$$y = e^{-2x} - e^{4x}$$

$$y = e^{x} - 2e^{2x}$$

$$y = 2e^{x} - 2e^{2x}$$

$$y = e^{-x} - e^{2x}$$

117.Umumiy yechim ko`rinishi orqali differensial tenglamani aniqlang:

$$y = c_1 e^{-x} + c_2 e^{-2x}$$

1 6

$$y'' + 3y' + 2y = 0$$

$$y'' - 3y' + 2y = 0$$

$$y'' + 3y' - 2y = 0$$

$$y'' + 3y' + 5y = 0$$

118.Umumiy yechim ko`rinishi orqali differensial tenglamani aniqlang:

$$y = c_1 e^{-2x} + c_2 e^{4x}$$

1 6

$$y'' - 2y' - 8y = 0$$

$$y'' - 5y' + 8y = 0$$

$$y'' + 7y' - 8y = 0$$

$$y'' + 8y' + 5y = 0$$

119.Fundamental yechimlari $y_1 = e^x, \quad y_2 = e^{2x}$ bo`lgan differensial tenglamaning ko`rinishini aniqlang

1 6

$$y'' - 3y' + 2y = 0$$

$$y'' - 3y' - 2y = 0$$

$$y'' + 3y' - 2y = 0$$

$$y'' + 3y' + 5y = 0$$

120.Fundamental yechimlari $y_1 = e^{2x}, \quad y_2 = e^{5x}$

bo`lgan  differensial tenglamaning ko`rinishini aniqlang

1 6

$$y'' - 7y' + 10y = 0$$

$$y'' - 6y' - 10y = 0$$

$$y'' + 3y' - 10y = 0$$

$$y'' + 7y' + 10y = 0$$

$$y_1 = e^x, \quad y_2 = e^{4x}$$

121.Fundamental yechimlari

bo`lgan  differensial tenglamaning ko`rinishini aniqlang

1 6

$$y'' - 5y' + 4y = 0$$

$$y'' - 4y' - 5y = 0$$

$$y'' + 4y' - 5y = 0$$

$$y'' + 5y' + 4y = 0$$

122.Chiziqli differensial tenglamani yeching:

$$y' - \frac{4y}{x} = x$$

2 7

$$y = Cx^4 - \frac{1}{2}x^2$$

$$y = Cx^4 + x^2$$

$$y = Cx^4 + \frac{1}{2}x^2$$

$$y = x^3 + Cx^2$$

123.Chiziqli differensial tenglamani yeching:

$$y' + \frac{2y}{x} = 4x$$

2 7

$$y = \frac{C}{x^2} + x^2$$

$$y = \frac{C}{x^2} + \frac{x^2}{2}$$

$$y = Cx^4 + \frac{1}{2}x^2$$

$$y = x^3 + Cx^2$$

124.Chiziqli differensial tenglamani yeching:

$$y' + \frac{2y}{x} = 2x$$

2 7

$$y = \frac{C}{x^2} + \frac{x^2}{2}$$

$$y = \frac{C}{x^2} + x^2$$

$$y = Cx^4 - \frac{1}{2}x^2$$

$$y = Cx^4 - \frac{1}{2}x^2$$

125.Chiziqli differensial tenglamani yeching:

$$y' - \frac{4y}{x} = -2x$$

2 7

$$y = Cx^4 + x^2$$

$$y = Cx^4 - \frac{1}{2}x^2$$

$$y = Cx^4 + \frac{1}{2}x^2$$

$$y = x^3 + Cx^2$$

126.Chiziqli differensial tenglamani yeching:

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

2 7

$$y = \frac{Ce^x - 1}{xe^x}$$

$$y = \frac{Ce^x + 1}{xe^x}$$

$$y = \frac{Ce^x - 1}{e^x}$$

$$y = \frac{C + e^{-x}}{x^2}$$

127.Chiziqli differensial tenglamani yeching:

$$y' + 3y = e^x$$

2 7

$$y = \frac{C + e^{4x}}{4e^{3x}}$$

$$y=\frac{C+e^{4x}}{e^{3x}}$$

$$y=\frac{C+e^{3x}}{4e^{4x}}$$

$$y=\frac{C-e^{4x}}{4e^{3x}}$$

128.Chiziqli differensial tenglamani yeching:

$$y'=4x+y$$

2 7

$$y=Ce^{x}-4x-4$$

$$y=e^{x}+x^{2}+C$$

$$y=e^{x}+C\left(x^{2}+x\right)$$

$$y=e^{x}+x+C$$

129.Chiziqli differensial tenglamani yeching:

$$y'-2xy=e^{x^{2}}$$

2 7

$$y=\left(C+x\right)e^{x^{2}}$$

$$y=\left(C+x\right)e^{x}$$

$$y=\left(Cx+1\right)e^{x^{2}}$$

$$y=C+xe^{x^{2}}$$

130.Chiziqli differensial tenglamani yeching:

$$y'+2xy=e^{-x^{2}}$$

2 7

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

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

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

$$y = C + xe^{-x^2}$$

131.Chiziqli differensial tenglamani yeching:

$$y' - \frac{y}{x} = \ln x$$

2 7

$$y = x\left(C + \frac{1}{2}\ln^2 x\right)$$

$$y = x\left(C + \frac{1}{2}\ln x\right)$$

$$y = \ln x\left(C + x^2\right)$$

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

132.Differensial tenglamani yeching:

$$y' + \frac{y}{x} = \frac{\sin x}{x}$$

2 7

$$y = \frac{1}{x}(C - cosx)$$

$$y = \ln x\left(C + x^2\right)$$

$$y = x(C - cosx)$$

$$y=\frac{1}{x}\left(C+cosx\right)$$

133.Differensial tenglamani yeching:

$$y'+\frac{y}{x}=\frac{cosx}{x}$$

2 7

$$y=\frac{1}{x}\left(C+\sin x\right)$$

$$y=x\left(C+\sin x\right)$$

$$y=x\left(C-\sin x\right)$$

$$y=\frac{1}{x}\left(C-\sin x\right)$$

134.Differensial tenglamani yeching:

$$y'-\frac{y}{x}=x\sin x$$

2 7

$$y=x\left(C-cosx\right)$$

$$y=x\left(C+cosx\right)$$

$$y=\frac{1}{x}\left(C-cosx\right)$$

$$y=\frac{1}{x}\left(C+cosx\right)$$

135.Differensial tenglamani yeching:

$$y'-\frac{y}{x}=x\cos x$$

2 7

$$y = x\left(C + \sin x\right)$$

$$y = x\left(C - \sin x\right)$$

$$y = \frac{1}{x}\left(C - \sin x\right)$$

$$y = \frac{1}{x}\left(C + \sin x\right)$$

136.Differensial tenglamani yeching:

$$y' + \frac{2y}{x} = 3e^{-x^3}$$

2 7

$$y = x^{-2}\left(C - e^{-x^3}\right)$$

$$y = x^{-2}\left(C + e^{-x^3}\right)$$

$$y = x^{2}\left(C - e^{-x^3}\right)$$

$$y = x^{2}\left(C + e^{-x^3}\right)$$

137.Differensial tenglamani yeching:

$$y' + \frac{2y}{x} = -3e^{-x^3}$$

2 7

$$y = x^{-2}\left(C + e^{-x^3}\right)$$

$$y = x^{-2}\left(C - e^{-x^3}\right)$$

$$y = x^2\left(C - e^{-x^3}\right)$$

$$y = x^2\left(C + e^{-x^3}\right)$$

138.Differensial tenglamani yeching:

$$y' - \frac{2y}{x} = 3x^4 e^{x^3}$$

2 7

$$y = x^2\left(C + e^{x^3}\right)$$

$$y = x^2\left(C - e^{x^3}\right)$$

$$y = x^{-2}\left(C + e^{x^3}\right)$$

$$y = x^{-2}\left(C - e^{x^3}\right)$$

139.Differensial tenglamani yeching:

$$y' - \frac{2y}{x} = -3x^4 e^{-x^3}$$

2 7

$$y = x^2\left(C + e^{-x^3}\right)$$

$$y = x^2\left(C - e^{-x^3}\right)$$

$$y = x^{-2}\left(C + e^{-x^3}\right)$$

$$y = x^{-2}\left(C - e^{-x^3}\right)$$

140.Differensial tenglamani yeching:

$$y' + \frac{3y}{x} = \frac{3}{x}$$

2 7

$$y = 1 + \frac{C}{x^3}$$

$$y = x - \frac{C}{x^3}$$

$$y = \frac{C + x}{x^3}$$

$$y = \frac{C - x}{x^3}$$

141.Differensial tenglamani yeching:

$$y' = 1 - 2x + y$$

2 7

$$y = Ce^x + 2x + 1$$

$$y = e^x + x^2 + C$$

$$y = e^x + C\left(x^2 + x\right)$$

$$y = Ce^x - 2x - 2$$

142.Tenglamani yeching

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

2 8

$$y = x\ln\left(\ln(Cx)\right)$$

$$y = \ln\left(\ln(Cx^2)\right)$$

$$y = \ln\left(\ln(Cx)\right)$$

$$y = x + \ln\left(\ln(Cx)\right)$$

143.Tenglamani yeching

$$y' = e^{\frac{y}{x}} + \frac{y}{x}$$

2 8

$$y = -x\ln\left(\ln\left(\frac{C}{x}\right)\right)$$

$$y = x\ln\left(\ln\left(\frac{C}{x}\right)\right)$$

$$y = \ln\left(\ln\left(\frac{C}{x}\right)\right)$$

$$y = x + \ln\left(\ln\left(\frac{C}{x}\right)\right)$$

144.Tenglamani yeching

$$x^2 y' = -y^2 + xy$$

2 8

$$y = \frac{x}{\ln x + C}$$

$$y = \frac{\ln x + C}{x}$$

$$y = x(\ln x + C)$$

$$y = x\ln x + C$$

145.Tenglamani yeching

$$y' = \frac{xy}{x^2 - y^2}$$

2 8

$2y^2 \ln(Cy) = -x^2$

$y^2 = -2x^2 \ln(Cx)$

$2y \ln(Cy) = -x^2$

$2y^2 \ln(Cy) = -x$

146.Tenglamani yeching

$$y' = \frac{y - x}{x}$$

2 8

$2y^2 \ln(Cy) = -x^2$

$x = y \ln\left(\frac{C}{x}\right)$

$y = x \ln\left(\frac{C}{y}\right)$

$y = x \ln\left(\frac{y}{C}\right)$

147.Tenglamani yeching

$$y'x - y = x \sin\frac{y}{x}$$

2 8

$y = 2xarctg(Cx)$

$y = x\,arctg\left(Cx\right)$

$y = x\,arctg\left(Cx^2\right)$

$y = 2x\,arctg\left(C + x\right)$

148.Tenglamani yeching

$x^2 y' = y^2$

2 8

$y = \dfrac{x}{1 - Cx}$

$y = \dfrac{x}{1 + Cx^2}$

$y = \dfrac{x}{1 - Cx^2}$

$y = \dfrac{x^2}{1 - Cx}$

149.Tenglamani yeching

$xy' = 2xtg\dfrac{y}{x} + y$

2 8

$y = x\arcsin\left(Cx^2\right)$

$y = \arcsin\left(Cx\right)$

$y = x + \arcsin\left(Cx\right)$

$y = x^2\arcsin\left(Cx\right)$

150.Tenglamani yeching

$x^2 y' = x^2 + y^2 + xy$

2 9

$y = xtg\left(C + \ln x\right)$

$y = xctg\left(C + \ln x\right)$

$y = xtg\left(C - \ln x\right)$

$y = xctg\left(C - \ln x\right)$

151.Tenglamani yeching

$x^2 y' = -x^2 + 2xy$

2 8

$y = x(1 + Cx)$

$y = x(1 + Cx^2)$

$y = x^2(1 + Cx)$

$y = x(C + x)$

152.Tenglamani yeching

$y^2 y' = x^2$

2 8

$y = \sqrt[3]{x^3 + C}$

$y = \sqrt[3]{x^2 + C}$

$y = x\sqrt[3]{x^3 - C}$

$y = x\sqrt[3]{x^2 - C}$

153.Tenglamani yeching

$x^2 y' = -3x^2 + 2xy$

2 8

$y = 3x + Cx^2$

$y = -3x + Cx^2$

$y = x + Cx^2$

$y = -x + Cx^2$

154.Tenglamani yeching

$x^2 y' = y^2 + xy$

2 8

$$y = \frac{x}{\ln\left(\frac{C}{x}\right)}$$

$$y = \frac{2x}{\ln\left(\frac{C}{x}\right)}$$

$$y = \frac{x}{\ln\left(\frac{C}{y}\right)}$$

$$y = -\frac{x}{\ln\left(\frac{C}{y}\right)}$$

155.Tenglamani yeching

$$y' = \frac{x^2 + y^2}{xy}$$

2 8

$y^2 = x^2\left(2\ln x + C\right)$

$y = x^2\left(2\ln x + C\right)$

$y^2 = x^2\left(-2\ln x + C\right)$

$$y = x\left(2\ln x + C\right)$$

156.Tenglamani yeching

$$y' = \frac{y}{x+y}$$

2 8

$$x = y\ln\left(Cy\right)$$

$$y = x\ln\left(Cx\right)$$

$$y = x\ln\left(Cy\right)$$

$$\ln y + \frac{y}{x} = C$$

157.Tenglamani yeching

$$xy' - y = xtg\frac{y}{x}$$

2 8

$$y = x\cdot\arcsin\left(Cx\right)$$

$$y = x\arcsin\left(Cx^2\right)$$

$$y = x + \arcsin\left(Cx\right)$$

$$y = x^2\arcsin\left(Cx\right)$$

158.Tenglamani yeching

$$x^2y' = -5x^2 + 2xy$$

2 8

$$y = 5x + Cx^2$$

$y = -5x + Cx^2$

$y = x + Cx^2$

$y = -x + Cx^2$

159.Tenglamani yeching

$x^2 y' = 5x^2 + 2xy$

2 8

$y = -5x + Cx^2$

$y = 5x + Cx^2$

$y = x + Cx^2$

$y = -x + Cx^2$

160.Tenglamani yeching

$y' = \dfrac{xy}{x^2 - y^2}$

2 8

$x^2 = -2y^2 \ln(Cy)$

$x^2 = 2y^2 \ln(Cy)$

$x^2 = 2y^2 \ln(Cx)$

$x = 2y \ln(Cy)$

161.Tenglamani yeching

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

2 8

$$\ln y + \frac{x}{y} = C$$

$$\ln y - \frac{x}{y} = C$$

$$\ln|x| + \frac{x}{y} = C$$

$$2\ln y + \frac{y}{x} = C$$

$$y'' - 2y' - 3y = 4e^{3x} + x$$

162.tenglama uchun xususiy yechim qanday ko`rinishda

qidiriladi?2 9

$$y_* = Axe^{3x} + Bx + C$$

$$y_* = Ae^{3x} + Bx + C$$

$$y_* = Axe^{3x} + Bx$$

$$y_* = 4Ae^{3x} + Bx + C$$

$$y'' + y = xe^{x} + 2e^{-x}$$

163.tenglama uchun xususiy yechim qanday ko`rinishda

qidiriladi?2 9

$$y_* = (Ax + B)e^{x} + Ce^{-x}$$

$$(Ax + B)e^{x}$$

$$y_* = Axe^{x} + Ce^{-x}$$

$$y_* = Ae^{x} + Ce^{-x}$$

$y'' - 2y' + 2y = e^x + 2\cos x$

164.tenglama uchun xususiy yechim qanday ko`rinishda

qidiriladi?2 9

$y_* = Ae^x + B\cos x + C\sin x$

$y_* = Axe^x + B\cos x + C\sin x$

$y_* = Axe^x + B\cos x$

$y_* = Axe^x + Bx\cos x +$
$+Cx\sin x$

$y'' - 2y' + 2y = e^x \cos x$

165.tenglama uchun xususiy yechim qanday ko`rinishda

qidiriladi?2 9

$y_* = e^x\left(Ax\cos x + Bx\sin x\right)$

$y_* = e^x\left(A\cos x + B\sin x\right)$

$y_* = Axe^x \cos x$

$y_* = \left(Ax + B\right)e^x \cos x$

$y'' + y = 4\sin x$

166.tenglama uchun xususiy yechim qanday ko`rinishda

qidiriladi?2 9

$y_* = x\left(A\cos x + B\sin x\right)$

$y_* = A\sin x$

$y_* = A\cos x + B\sin x$

$y_* = Ax\sin x$

$y'' - y' = \mathrm{ch}\,2x$

167.tenglama uchun xususiy yechim qanday ko`rinishda

qidiriladi?2 9

$y_* = Ae^{2x} + Be^{-2x}$

$y_* = Axe^{2x} + Be^{-2x}$

$y_* = Ae^{2x} + Bxe^{-2x}$

$y_* = Axe^{2x} + Bxe^{-2x}$

$y'' - 2y' = \mathrm{ch}\,2x$

168.tenglama uchun xususiy yechim qanday ko`rinishda

qidiriladi?2 9

$y_* = Axe^{2x} + Be^{-2x}$

$y_* = Ae^{2x} + Be^{-2x}$

$y_* = Ae^{2x} + Bxe^{-2x}$

$y_* = Axe^{x} + Be^{-2x}$

$y'' + 2y' = \mathrm{ch}\,2x$

169.tenglama uchun xususiy yechim qanday ko`rinishda

qidiriladi?2 9

$y_* = Ae^{2x} + Bxe^{-2x}$

$y_* = Axe^{2x} + Be^{-2x}$

$y_* = Ae^{2x} + Be^{-2x}$

$y_* = Axe^{x} + Be^{-2x}$

$y'' - 4y = \mathrm{ch}\, 2x$

170.tenglama uchun xususiy yechim qanday ko`rinishda

qidiriladi?2 9

$y_* = Axe^{2x} + Bxe^{-2x}$

$y_* = Axe^{2x} + Be^{-2x}$

$y_* = Ae^{2x} + Be^{-2x}$

$y_* = Ae^{2x} + Bxe^{-2x}$

$y'' + 4y = \mathrm{ch}\, 2x$

171.tenglama uchun xususiy yechim qanday ko`rinishda

qidiriladi?2 9

$y_* = Ae^{2x} + Be^{-2x}$

$y_* = A\cos x + B\sin x$

$y_* = Axe^{2x} + Bxe^{-2x}$

$y_* = A\cos x$

172.Qaysi tenglamaning xususiy yechimi quyidagi ko‘rinishda qidiriladi?

$y_* = \left(Ax + B\right)e^{x} + Ce^{-x}$

2 9

$y'' + y = xe^{x} + 2e^{-x}$

$y'' + y = 3e^{x} + xe^{-x}$

$y'' + 4y = \mathrm{ch}\, x$

$y'' - y = xe^{x} + 3e^{-x}$

173.Qaysi tenglamaning xususiy yechimi quyidagi ko‘rinishda qidiriladi?

$y_* = Ae^{2x} + Bxe^{-2x}$

2 9

$y'' + 2y' = sh2x$

$y'' + 4y = \mathrm{ch}\, x$

$y'' + y = 3e^{2x} + xe^{-2x}$

$y'' + y = xe^{x} + 2e^{-x}$

174.Qaysi tenglamaning xususiy yechimi quyidagi ko‘rinishda qidiriladi?

$y_* = e^{x}\left(Ax\cos x + Bx\sin x\right)$

2 9

$y'' - 2y' + 2y = e^{x}\cos x$

$y'' + 4y = 5\sin x$

$y'' + 4y = e^{x}\sin x$

$y'' + y = 4\sin x$

175.Qaysi tenglamaning xususiy yechimi quyidagi ko‘rinishda qidiriladi?

$y_* = Axe^{2x} + Be^{-2x}$

2 9

$y'' - 2y' = sh2x$

$y'' + y = xe^{2x} + 2e^{-2x}$

$y'' + y = 3e^{2x} + xe^{-2x}$

$y'' + 2y' = sh2x$

176.Qaysi tenglamaning xususiy yechimi quyidagi ko‘rinishda qidiriladi?

$y_* = Axe^{2x} + Bxe^{-2x}$

2 9

$y'' - 4y = \text{ch}\, 2x$

$y'' - 2y' = sh2x$

$y'' - 2y' = 3e^{2x} + xe^{-2x}$

$y'' + y = xe^{2x} + 2e^{-2x}$

177.Qaysi tenglamaning xususiy yechimi quyidagi ko‘rinishda qidiriladi?

$y_* = \left(Ax^3 + Bx^2\right)e^{2x}$

2 9

$y'' - 4y' + 4y = 6xe^{2x}$

$y'' - 4y = \text{ch}\, 2x$

$y'' - 2y' = xe^{2x}$

$y'' - 4y = x^2e^{2x}$

178.Qaysi tenglamaning xususiy yechimi quyidagi ko‘rinishda qidiriladi?

$y_* = (Ax + B)e^x + Cxe^{4x}$

2 9

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

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

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

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

179.Qaysi tenglamaning xususiy yechimi quyidagi koʻrinishda qidiriladi?

$y_* = (Ax^2 + Bx)e^x + Ce^{4x}$

2 9

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

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

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

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

180.Qaysi tenglamaning xususiy yechimi quyidagi koʻrinishda qidiriladi?

$y_* = Ae^x + (Bx^2 + Cx)e^{4x}$

2 9

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

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

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

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

181.Qaysi tenglamaning xususiy yechimi quyidagi ko‘rinishda qidiriladi?

$y_*=Axe^{-x}+\left(Bx^2+Cx\right)e^{4x}$

2 9

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

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

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

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

182.Koshi masalasini yechimini toping

$y''=4e^{-2x}+6x \quad y(0)=1,\ y'(0)=0$

2 10

$y=e^{-2x}+x^3+2x$

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

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

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

183.Koshi masalasini yechimini toping

$y''=xe^{-x} \quad y(0)=1,\ y'(0)=0$

2 10

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

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

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

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

184.Koshi masalasini yechimini toping

$y''=8\cos^2 x \quad y(0)=-1,\ y'(0)=1$

2 10

$y=2x^2-\cos 2x+x$

$y=1-2\cos 2x+x$

$y=x-\cos 2x$

$y=2x^3-\cos 2x+x$

185.Koshi masalasini yechimini toping

$y''=e^{2x} \quad y(0)=1,\ y'(0)=0$

2 10

$y=\frac{1}{4}e^{2x}-\frac{1}{2}x+\frac{3}{4}$

$y=\frac{1}{4}e^{2x}+\frac{1}{2}x+\frac{3}{4}$

$y=\frac{1}{4}e^{2x}-\frac{1}{2}x+1$

$y=\frac{1}{2}e^{2x}-x+\frac{1}{2}$

186.Koshi masalasini yechimini toping

$y''=\sin 2x \quad y(0)=1,\ y'(0)=-1$

2 10

$y=-\frac{1}{4}\sin 2x-\frac{1}{2}x+1$

$y=\frac{1}{4}\sin 2x+1$

$y=-\frac{1}{4}\sin 2x+\frac{1}{2}x+1$

$y=\frac{1}{4}\sin 2x-x+1$

187.Koshi masalasini yechimini toping

$y''=e^{-x}+2x\quad y(0)=1,\ y'(0)=0$

2 10

$y=e^{-x}+\frac{x^3}{3}+x$

$y=e^{-x}+\frac{x^3}{6}+x$

$y=e^{-x}+\frac{x^3}{6}+x+1$

$y=e^{-x}+\frac{x^3}{2}+2x$

$y'''=24x$

188.tenglamaning umumiy yechimini

toping.2 10

$y=x^4+C_1x^2+C_2x+C_3$

$y=x^2+x+1$

$y=x^3+C_1x+C_2$

$y=x^2+C_1x+C_2$

$\left(1+x^2\right)y''-2xy'=2x$

189.tenglamaning umumiy yechimini

toping.2 10

$y = C_1\left(x + \frac{x^3}{3}\right) - x + C_2$

$y = C_1\left(x + \frac{x^3}{3}\right) + C_2$

$y = C\left(x + \frac{x^3}{3}\right) - x$

$y = C\left(x + \frac{x^3}{3}\right) + x$

200. $y''(x-1) - y' = 0$

tenglamaning umumiy yechimini toping.

2 10

$y = C_1x^2 - 2C_1x + C_2$

$y = C_1\frac{x^2}{2} - C_2x$

$y = C_1x^2 + C_2$

$y = C_1\frac{x^2}{2} - x + C_2$

201. $y''' = \cos x$

tenglamaning umumiy yechimini toping.

2 10

$y = -\sin x + C_1x^2 + C_2x + C$

$y = -\sin x + Cx$

$y = \sin x + \frac{C_1x^2}{2} + C_2x + C_3$

$y = -\sin x + \frac{Cx^2}{2}$

$y'' = xe^{-x}$

202. tenglamaning umumiy yechimini toping.

2 10

$$y = (x+2)e^{-x} + C_1 x + C_2$$

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

$$y = e^{-x} + Cx - C_1$$

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

$$(1+x)y'' - y' = 1$$

203.tenglamaning umumiy yechimini

toping.2 10

$$y = C_1\left(x + \frac{x^2}{2}\right) - x + C_2$$

$$y = C_1\left(x + \frac{x^2}{2}\right) + C_2$$

$$y = C\left(x + \frac{x^2}{2}\right) - x$$

$$y = C_1\left(x + \frac{x^2}{2}\right) + C_2 x$$

$$y''(x+1) - y' = 0$$

204.tenglamaning umumiy yechimini

toping.2 10

$$y = C_1 x^2 + 2C_1 x + C_2$$

$$y = C_1 \frac{x^2}{2} - C_2 x$$

$$y = C_1 x^2 + C_2$$

$$y = C_1\frac{x^2}{2} - x + C_2$$

$$\left(e^x + 2\right)y'' - e^x y' = 0$$

205.tenglamaning umumiy yechimini

toping.2 10

$$y = C_1(e^x + 2x) + C_2$$

$$y = C_1(e^x - 2x) + C_2$$

$$y = C_1e^x + 2C_2x$$

$$y = C_1(e^x - 2x) + C_2x$$

206. $\left(e^x + 3\right)y'' - e^x y' = 0$;

tenglamaning umumiy yechimini toping.

2 10

$$y = C_1(e^x + 3x) + C_2$$

$$y = C_1(e^x - 3x) + C_2$$

$$y = C_1e^x + 3x + C_2$$

$$y = C_1(e^x - 3x) + C_2x$$

207. $\left(1 + x\right)y'' - y' = 2$

tenglamaning umumiy yechimini toping.

2 10

$$y = C_1\left(x + \frac{x^2}{2}\right) - 2x + C_2$$

$$y = C_1\left(x + \frac{x^2}{2}\right) + C_2$$

$$y = C\left(x + \frac{x^2}{2}\right) + 2x$$

$$y = C_1\left(x + \frac{x^2}{2}\right) + C_2 x$$

208. $\left(e^x - 2\right)y'' - e^x y' = 0$

tenglamaning umumiy yechimini toping.

2 10

$$y = C_1(e^x - 2x) + C_2$$

$$y = C_1(e^x + 2x) + C_2$$

$$y = C_1 e^x + 2C_2 x$$

$$y = C_1(e^x - 2x) + C_2 x$$

209. $\left(e^x + 1\right)y'' = e^x y'$ !

tenglamaning umumiy yechimini toping.

2 10

$$y = C_1(e^x + x) + C_2$$

$$y = C_1 e^x + C_2 x$$

$$y = C_1 e^x + x + C_2$$

$$y = C_1\left(e^x + 1\right) + C_2 x$$

210 $\left(1 - 2x\right)y'' + 2y' = 2$

tenglamaning umumiy yechimini toping.

2 10

$$y = C_1\left(x^2 - x\right) + x + C_2$$

$$y = C_1\left(x^2 - x\right) + 2x + C_2$$

$y = C_1\left(x^2 + x\right) - x + C_2$

$y = C\left(x^2 - x\right) + 2x$

211$(2x+1)y'' - 2y' = 2$

tenglamaning umumiy yechimini toping.

2 10

$y = C_1\left(x^2 + x\right) - x + C_2$

$y = C_1\left(x^2 + x\right) + 2x + C_2$

$y = C_1\left(x^2 - x\right) + x + C_2$

$y = C\left(x^2 + x\right) - 2x$

212.Differensial tenglamaning umumiy integralini toping.

$\left(2xy^2 + e^x\right)dx + \left(2x^2 y - \cos x\right)dy = 0$

2 11

$x^2 y^2 + e^{x.} - \sin x = C$

$2x^2 y^2 + e^{x.} + \sin x = C$

$2x^2 y^2 + e^{x.} - \sin x = C$

$x^2 y^2 + e^{x.} + \sin x = C$

213.Differensial tenglamaning umumiy integralini toping.

$2x\left(y^2 + 1\right)dx + y\left(2x^2 - 3y\right)dy = 0$

2 11

$x^2 y^2 + x^{2.} - y^3 = C$

$2x^2 y^2 + x^{2.} - y^3 = C$

$x^2y^2 - x^2 + y^3 = C$

$2x^2y^2 + x^2 + y^3 = C$

214.Differensial tenglamaning umumiy integralini toping.

$\left(2xy+3y^2\right)dx+\left(x^2+6xy\right)dy=0$

2 11

$x^2y+3xy^2=C$

$x^2y+6xy=C$

$3xy^2+x^3y=C$

$x^3y+3xy^2=C$

215.Differensial tenglamaning umumiy integralini toping.

$(x+\sin y)dx+(x\cos y+\sin y)dy=0.$

2 11

$\frac{x^2}{2}+x\sin y-\cos y=C$

$\frac{x^2}{2}+2x\sin y-\cos y=C$

$\frac{x^2}{2}+x\sin y+\cos y=C$

$\frac{x^2}{2}+2x\sin y+\cos y=C$

216.Differensial tenglamaning umumiy integralini toping.

$e^y dx+\left(xe^y-2y\right)dy=0.$

2 11

$xe^y - y^2 = \mathrm{C}$

$2xe^{y} - y^{2} = \mathrm{C}$

$xe^{y} + y^{2} = \mathrm{C}$

$2xe^{y} + y^{2} = \mathrm{C}$

217.Differensial tenglamaning umumiy integralini toping.

$(x^3 + \cos y)dy - (2 - 3x^2 y)dx = 0$

2 11

$x^3 y + \sin y - 2x = C$

$2x^3 y + x\cos y - 2x = C$

$x^3 y - \sin y + 2x = C$

$x^3 y + x\cos y - x = C$

218.Differensial tenglamaning umumiy integralini toping.

$\left(\frac{1}{x^2} - y\right)dx + (y - x)dy = 0$

2 11

$-\frac{1}{x} - xy + \frac{y^2}{2} = C$

$-\frac{1}{x} - 2xy + \frac{y^2}{2} = C$

$\frac{1}{x} - xy + \frac{y^2}{2} = C$

$-\frac{1}{x} + 2xy + \frac{y^2}{2} = C$

219.Differensial tenglamaning umumiy integralini toping.

$(e^{y} + 2xy)dx + (e^{y} + x)xdy = 0$

2 11

$xe^y + x^2 y = C$

$2xe^y + x^2 y = C$

$xe^y + 2x^2 y = C$

$2xe^y - x^2 y = C$

220.Differensial tenglamaning umumiy integralini toping.

$\left(x^3 + xy^2\right)dx + x^2 y dy = 0$

2 11

$\frac{x^4}{4} + \frac{x^2 y^2}{2} = C$

$\frac{x^4}{2} + \frac{x^2 y^2}{2} = C$

$\frac{x^4}{4} + x^2 y^2 = C$

$x^4 + x^2 y^2 = C$

221.Differensial tenglamaning umumiy integralini toping.

$(2x + \sin y)\,dx + \left(x\cos y + e^y\right)dy = 0$

2 11

$x^2 + x\sin y + e^y = C$

$x^2 + 2x\sin y - e^y = C$

$x^2 + x\sin y - e^y = C$

$x^2 + 2x\sin y + e^y = C$

222.Differensial tenglamaning umumiy integralini toping.

$(2x+\sin y)\,dx+(x\cos y+tgy)\,dy=0$

2 11

$x^2+x\sin y-\ln|\cos x|=C$

$x^2+x\sin y+\ln|\cos x|=C$

$x^2+x\sin y-\ln|\sin x|=C$

$x^2+2x\sin y-\ln|\cos x|=C$

223.Differensial tenglamaning umumiy integralini toping.

$2x(5y^2+3x)dx+(10x^2-3y)ydy=0$

2 11

$5x^2y^2+2x^3-y^3=C$

$10x^2y^2+2x^3-y^3=C$

$5x^2y^2+3x^3-y^3=C$

$10x^2y^2+x^3-y^3=C$

224.Differensial tenglamaning umumiy integralini toping.

$(y^3+\cos x)dx+3xy^2dy=0$

2 11

$xy^3+\sin x=C$

$2xy^3-\sin x=C$

$2xy^3+y\sin x=C$

$xy^3+y\sin x=C$

225.Differensial tenglamaning umumiy integralini toping.

$\left(2xy+\sin y-e^{-x}\right)dx+\left(x^2+x\cos y\right)dy=0$

2 11

$x^2y+x\sin y+e^{-x}=C$

$2x^2y+2x\cos y+e^{-x}=C$

$x^2y+x\cos y-e^{-x}=C$

$2x^2y+2x\sin y+e^{-x}=C$

226.Differensial tenglamaning umumiy integralini toping.

$(3x^2+2x-y)dx+(2y-x+3y^2)dy=0$

2 11

$x^3+y^3+x^2+y^2-xy=C$

$x^3+y^3+x^2+y^2-2xy=C$

$x^3-y^3+x^2-2xy=C$

$x^3+yx^2-2xy=C$

227 Differensial tenglamaning umumiy integralini toping.

$\left(e^y-chx\right)dx+\left(xe^y-2y\right)dy=0$

2 11

$xe^y-shx-y^2=C$

$xe^y+shx-y^2=C$

$xe^y-2shx-y^2=C$

$xe^y+2shx-y^2=C$

228.Differensial tenglamaning umumiy integralini toping.

$$\left(2x+ye^{xy}\right)dx-\left(2-xe^{xy}\right)dy=0$$

2 11

$x^2+e^{xy}-2y=C$

$x^2-e^{xy}+2y=C$

$x^2+2e^{xy}-2y=C$

$x^2-2e^{xy}+2y=C$

229.Differensial tenglamaning umumiy integralini toping.

$$\left(2x-ye^{xy}\right)dx-\left(xe^{xy}-2\right)dy=0$$

2 11

$x^2-e^{xy}+2y=C$

$x^2+e^{xy}-2y=C$

$x^2+2e^{xy}-2y=C$

$x^2-2e^{xy}+2y=C$

230.Differensial tenglamaning umumiy integralini toping.

$$\left(2xy+y\sec^2x+1\right)dx+\left(x^2+tgx\right)dy=0$$

2 11

$x^2y+ytgx+x=C$

$2x^2y+2ytgx+x=C$

$x^2y-2ytgx+x=C$

$2x^2y-ytgx+x=C$

231.Differensial tenglamaning umumiy integralini toping.

$\left(y+e^{x}\sin y\right)dx+\left(x+e^{x}\cos y-1\right)dy=0$

2 11

$xy+e^{x}\sin y-y=C$

$2xy+2e^{x}\sin y-y=C$

$xy+2e^{x}\sin y-y=C$

$xy+2e^{x}\sin y+y=C$

132.Ushbu $y''+py'+qy=f(x)$ differensial tenglamani o‘zgarmasni variatsiyalash usulida yechishda $C_1(x)$ va $C_2(x)$ funksiyalarni aniqlovchi tenglamalar sistemasini tuzing.

2 12

$\begin{cases} C_1'y_1+C_2'y_2=0 \\ C_1'y_1'+C_2'y_2'=f(x) \end{cases}$

$\begin{cases} C_1y_1+C_2y_2=0 \\ C_1y_1'+C_2y_2'=f(x) \end{cases}$

$\begin{cases} C_1y_1'+C_2y_2'=0 \\ C_1y_1'+C_2y_2'=f(x) \end{cases}$

$\begin{cases} C_1'y_1+C_2'y_2=0 \\ C_1y_1'+C_2y_2'=f(x) \end{cases}$

233 $y''+4y=2tgx$

differensial tenglamani o‘zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani aniqlang.

2 12

$\begin{cases} C_1'(x)\cos 2x+C_2'(x)\sin 2x=0 \\ -C_1'(x)\sin 2x+C_2'(x)\cos 2x=tgx \end{cases}$

$$\begin{cases} C_1'(x)e^{2x} + C_2'(x)e^{-2x} = 0 \\ C_1'(x)e^{2x} - C_2'(x)e^{-2x} = tgx \end{cases}$$

$$\begin{cases} C_1'(x)\cos 2x + C_2'(x)\sin 2x = 0 \\ -C_1'(x)\sin 2x + C_2'(x)\cos 2x = 2tgx \end{cases}$$

$$\begin{cases} C_1'(x)e^{2x} + C_2'(x)e^{-2x} = 0 \\ C_1'(x)xe^{2x} - C_2'(x)e^{-2x} = 2tgx \end{cases}$$

234 $y'' + 3y' + 2y = \dfrac{1}{e^x + 1}$

differensial tenglamani o‘zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani aniqlang.

2 12

$$\begin{cases} C_1'(x)e^{-x} + C_2'(x)e^{-2x} = 0 \\ -C_1'(x)e^{-x} - 2C_2'(x)e^{-2x} = \dfrac{1}{e^x + 1} \end{cases}$$

$$\begin{cases} C_1'(x)\cos 2x + C_2'(x)\sin 2x = 0 \\ -C_1'(x)\sin 2x + C_2'(x)\cos 2x = \dfrac{1}{e^x + 1} \end{cases}$$

$$\begin{cases} C_1'(x)\cos 2x + C_2'(x)\sin 2x = 0 \\ -2C_1'(x)\sin 2x + 2C_2'(x)\cos 2x = \dfrac{1}{e^x + 1} \end{cases}$$

$$\begin{cases} C_1(x)e^{-x} + C_2(x)e^{-2x} = 0 \\ -C_1(x)e^{-x} - 2C_2(x)e^{-2x} = \dfrac{1}{e^x + 1} \end{cases}$$

235 $y'' + y = \dfrac{1}{\sin x}$

differensial tenglamani o‘zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani aniqlang.

2 12

$$\begin{cases} C_1'(x)\cos x + C_2'(x)\sin x = 0 \\ -C_1'(x)\sin x + C_2'(x)\cos x = \dfrac{1}{\sin x} \end{cases}$$

$$\begin{cases} C_1'(x)\cos 2x + C_2'(x)\sin 2x = 0 \\ -C_1'(x)\sin 2x + C_2'(x)\cos 2x = \dfrac{1}{\sin x} \end{cases}$$

$$\begin{cases} C_1'(x)\cos 2x + C_2'(x)\sin 2x = 0 \\ -2C_1'(x)\sin 2x + 2C_2'(x)\cos 2x = \dfrac{1}{\sin x} \end{cases}$$

$$\begin{cases} C_1(x)\cos x + C_2(x)\sin x = 0 \\ -C_1(x)\sin x + C_2(x)\cos x = \dfrac{1}{\sin x} \end{cases}$$

236 $y'' - 2y' + y = \dfrac{e^x}{x}$

differensial tenglamani o‘zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani aniqlang.

2 12

$$\begin{cases} C_1'(x)e^x + C_2'(x)xe^x = 0 \\ C_1'(x)e^x + C_2'(x)(1+x)e^x = \dfrac{e^x}{x} \end{cases}$$

$$\begin{cases} C_1'(x)e^x + C_2'(x)e^{-x} = 0 \\ C_1'(x)e^x - C_2'(x)e^{-x} = \dfrac{e^x}{x} \end{cases}$$

$$\begin{cases} C_1'(x)e^x + C_2'(x)e^{-x} = 0 \\ C_1'(x)xe^x - C_2'(x)e^{-x} = \dfrac{e^x}{x} \end{cases}$$

$$\begin{cases} C_1'(x)e^x + C_2'(x)xe^x = \dfrac{e^x}{x} \\ C_1'(x)e^x + C_2'(x)(1+x)e^x = 0 \end{cases}$$

237. $y'' + 2y' + y = \dfrac{3\sqrt{1+x}}{e^x}$

differensial tenglamani o‘zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani aniqlang.

2 12

$$\begin{cases} C_1'(x)e^{-x} + C_2'(x)xe^{-x} = 0 \\ -C_1'(x)e^{-x} + C_2'(x)(1-x)e^{-x} = \dfrac{3\sqrt{1+x}}{e^x} \end{cases}$$

$$\begin{cases} C_1'(x)e^{x} + C_2'(x)xe^{x} = 0 \\ C_1'(x)e^{x} + C_2'(x)(1+x)e^{x} = \dfrac{3\sqrt{1+x}}{e^x} \end{cases}$$

$$\begin{cases} C_1'(x)e^{-x} + C_2'(x)e^{x} = 0 \\ -C_1'(x)e^{-x} + C_2'(x)e^{x} = \dfrac{3\sqrt{1+x}}{e^x} \end{cases}$$

$$\begin{cases} C_1'(x)e^{-x} + C_2'(x)e^{x} = \dfrac{3\sqrt{1+x}}{e^x} \\ -C_1'(x)e^{-x} + C_2'(x)e^{x} = 0 \end{cases}$$

$$y'' + 2y' + y = \frac{1}{xe^x}$$

238.differensial tenglamani o‘zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani

aniqlang.2 12

$$\begin{cases} C_1'(x)e^{-x} + C_2'(x)xe^{-x} = 0 \\ -C_1'(x)e^{-x} + C_2'(x)(1-x)e^{-x} = \dfrac{1}{xe^x} \end{cases}$$

$$\begin{cases} C_1'(x)e^{x} + C_2'(x)xe^{x} = 0 \\ C_1'(x)e^{x} + C_2'(x)(1+x)e^{x} = \dfrac{1}{xe^x} \end{cases}$$

$$\begin{cases} C_1'(x)e^{-x} + C_2'(x)e^{x} = 0 \\ -C_1'(x)e^{-x} + C_2'(x)e^{x} = \dfrac{1}{xe^x} \end{cases}$$

$$\begin{cases} C_1'(x)e^{-x} + C_2'(x)e^{x} = \dfrac{1}{xe^{x}} \\ -C_1'(x)e^{-x} + C_2'(x)e^{x} = 0 \end{cases}$$

$$y'' + y = 4ctgx$$

239.differensial tenglamani o‘zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani

aniqlang.2 12

$$\begin{cases} C_1'(x)\cos x + C_2'(x)\sin x = 0 \\ -C_1'(x)\sin x + C_2'(x)\cos x = 4ctgx \end{cases}$$

$$\begin{cases} C_1'(x)\cos 2x + C_2'(x)\sin 2x = 0 \\ -C_1'(x)\sin 2x + C_2'(x)\cos 2x = 4ctgx \end{cases}$$

$$\begin{cases} C_1'(x)\cos 2x + C_2'(x)\sin 2x = 0 \\ -2C_1'(x)\sin 2x + 2C_2'(x)\cos 2x = 4ctgx \end{cases}$$

$$\begin{cases} C_1(x)\cos x + C_2(x)\sin x = 0 \\ -C_1(x)\sin x + C_2(x)\cos x = 4ctgx \end{cases}$$

$$y'' + y = 2\sec^3 x$$

240.differensial tenglamani o‘zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani

aniqlang.2 12

$$\begin{cases} C_1'(x)\cos x + C_2'(x)\sin x = 0 \\ -C_1'(x)\sin x + C_2'(x)\cos x = 2\sec^3 x \end{cases}$$

$$\begin{cases} C_1'(x)\cos 2x + C_2'(x)\sin 2x = 0 \\ -C_1'(x)\sin 2x + C_2'(x)\cos 2x = 2\sec^3 x \end{cases}$$

$$\begin{cases} C_1'(x)\cos 2x + C_2'(x)\sin 2x = 0 \\ -2C_1'(x)\sin 2x + 2C_2'(x)\cos 2x = 2\sec^3 x \end{cases}$$

$$\begin{cases} C_1(x)\cos x + C_2(x)\sin x = 0 \\ -C_1(x)\sin x + C_2(x)\cos x = 2\sec^3 x \end{cases}$$

$y'' + 2y' = 3sh2x$

241.differensial tenglamani o‘zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani aniqlang.2 12

$$\begin{cases} C_1'(x) + C_2'(x)e^{-2x} = 0 \\ -2C_2'(x)e^{-2x} = 3shx \end{cases}$$

$$\begin{cases} C_1'(x)e^{x} + C_2'(x)e^{-2x} = 0 \\ C_1'(x)e^{x} - 2C_2'(x)e^{-2x} = 3shx \end{cases}$$

$$\begin{cases} C_1'(x)e^{x} + C_2'(x)e^{2x} = 0 \\ C_1'(x)e^{x} + 2C_2'(x)e^{2x} = 3shx \end{cases}$$

$$\begin{cases} C_1'(x) + C_2'(x)e^{2x} = 0 \\ 2C_2'(x)e^{2x} = 3shx \end{cases}$$

$$\begin{cases} C_1'(x) + C_2'(x)e^{-2x} = 0 \\ -2C_2'(x)e^{-2x} = 3shx \end{cases}$$

242.Sistema qaysi differensial tenglamani Lagranj usulida yechish uchun tuzilgan?2 12

$y'' + 2y' = 3shx$

$y'' + 2y = 3shx$

$y'' - 2y = 3shx$

$y'' - 2y' = 3shx$

$$\begin{cases} C_1'(x)\cos x + C_2'(x)\sin x = 0 \\ -C_1'(x)\sin x + C_2'(x)\cos x = 4ctgx \end{cases}$$

243.Sistema qaysi differensial tenglamani Lagranj usulida yechish uchun tuzilgan?

2 12

$$y'' + y = 4ctgx$$

$$y'' + 2y' = 4ctgx$$

$$y'' + y' = 4ctgx$$

$$y'' - 2y' = 4ctgx$$

$$\begin{cases} C_1'(x) + C_2'(x)e^{3x} = 0 \\ C_2'(x)e^{3x} = ch2x \end{cases}$$

244.Sistema qaysi differensial tenglamani Lagranj usulida yechish uchun

tuzilgan?2 12

$$y'' - 3y' = 3ch2x$$

$$y'' - 3y = 2ch2x$$

$$y'' + 3y' = ch2x$$

$$y'' - 3y = 3chx$$

$$\begin{cases} C_1'(x)\cos x + C_2'(x)\sin x = 0 \\ -C_1'(x)\sin x + C_2'(x)\cos x = 2\sec^3 x \end{cases}$$

245.Sistema qaysi differensial tenglamani Lagranj usulida yechish uchun

tuzilgan?2 12

$$y'' + y = 2\sec^3 x$$

$$y'' - y = 2\sec^3 x$$

$$y'' + y' = 2\sec^3 x$$

$$y'' - y' = 2\sec^3 x$$

$$\begin{cases} C_1'(x)e^{-x} + C_2'(x)xe^{-x} = 0 \\ -C_1'(x)e^{-x} + C_2'(x)(1-x)e^{-x} = \dfrac{1}{xe^x} \end{cases}$$

246.Sistema qaysi differensial tenglamani Lagranj usulida yechish uchun

tuzilgan?2 12

$$y'' + 2y' + y = \frac{1}{xe^x}$$

$$y'' - 2y' + y = \frac{1}{xe^x}$$

$$y'' - y = \frac{1}{xe^x}$$

$$y'' + y' = \frac{1}{xe^x}$$

$$\begin{cases} C_1'(x)e^{x} + C_2'(x)xe^{x} = 0 \\ C_1'(x)e^{x} + C_2'(x)(1+x)e^{x} = \dfrac{e^x}{x} \end{cases}$$

247.Sistema qaysi differensial tenglamani Lagranj usulida yechish uchun

tuzilgan?2 12

$$y'' - 2y' + y = \frac{e^x}{x}$$

$$y'' + 2y' + y = \frac{e^x}{x}$$

$$y'' + 2y' + y = \frac{1}{xe^x}$$

$$y'' - 2y' + y = \frac{1}{xe^x}$$

$$\begin{cases} C_1'(x)e^{-x} + C_2'(x)xe^{-x} = 0 \\ -C_1'(x)e^{-x} + C_2'(x)(1-x)e^{-x} = \dfrac{3\sqrt{1+x}}{e^x} \end{cases}$$

248.Sistema qaysi differensial tenglamani Lagranj usulida yechish uchun

tuzilgan?2 12

$$y'' + 2y' + y = \frac{3\sqrt{1+x}}{e^x}$$

$$y'' - 2y' + y = \frac{3\sqrt{1+x}}{e^x}$$

$$y'' + y = \frac{3\sqrt{1+x}}{e^x}$$

$$y'' - y = \frac{3\sqrt{1+x}}{e^x}$$

$$\begin{cases} C_1'(x)\cos 2x + C_2'(x)\sin 2x = 0 \\ -C_1'(x)\sin 2x + C_2'(x)\cos 2x = tgx \end{cases}$$

249.Sistema qaysi differensial tenglamani Lagranj usulida yechish uchun

tuzilgan?2 12

$$y'' + 4y = 2tgx$$

$$y'' + 4y = tgx$$

$$y'' - 4y = 2tgx$$

$$y'' - 4y = tgx$$

$$\begin{cases} C_1'(x)e^{-x} + C_2'(x)e^{-2x} = 0 \\ -C_1'(x)e^{-x} - 2C_2'(x)e^{-2x} = \dfrac{1}{e^x + 1} \end{cases}$$

250.Sistema qaysi differensial tenglamani Lagranj usulida yechish uchun tuzilgan?2 12

$$y'' + 3y' + 2y = \frac{1}{e^x + 1}$$

$$y'' + y' - 2y = \frac{1}{e^x + 1}$$

$$y'' - 3y' + 2y = \frac{1}{e^x + 1}$$

$$y'' - y' - 2y = \frac{1}{e^x + 1}$$

$$\begin{cases} C_1'(x)e^{x} + C_2'(x)e^{-2x} = 0 \\ C_1'(x)e^{x} - 2C_2'(x)e^{-2x} = \dfrac{1}{e^x + 1} \end{cases}$$

251.Sistema qaysi differensial tenglamani Lagranj usulida yechish uchun tuzilgan?2 12

$$y'' + y' - 2y = \frac{1}{e^x + 1}$$

$$y'' + 3y' + 2y = \frac{1}{e^x + 1}$$

$$y'' - 3y' + 2y = \frac{1}{e^x + 1}$$

$$y'' - y' - 2y = \frac{1}{e^x + 1}$$

252.Differensial tenglamalar sistemasini noma’lumlarni yo‘qotish usulida yeching:

$$\begin{cases} x' = 2y, & x(0) = 0 \\ y' = -2x, & y(0) = 2 \end{cases}$$

2 13

$$\begin{cases} x(t) = 2\sin 2t \\ y(t) = 2\cos 2t \end{cases}$$

$$\begin{cases} x(t) = -2\sin 2t \\ y(t) = 2\cos 2t \end{cases}$$

$$\begin{cases} x(t) = 2\,\mathrm{sh}\,2t \\ y(t) = 2\,\mathrm{ch}\,2t \end{cases}$$

$$\begin{cases} x(t) = -2sh2t \\ y(t) = 2ch2t \end{cases}$$

253.Differensial tenglamalar sistemasini noma’lumlarni yo‘qotish usulida yeching:

$$\begin{cases} x' = 2y, & x(0) = 1 \\ y' = -2x, & y(0) = 0 \end{cases}$$

2 13

$$\begin{cases} x(t) = \cos 2t \\ y(t) = -\sin 2t \end{cases}$$

$$\begin{cases} x(t) = cos2t \\ y(t) = \sin 2t \end{cases}$$

$$\begin{cases} x(t) = 1 + \sin 2t \\ y(t) = 1 - \cos 2t \end{cases}$$

$$\begin{cases} x(t) = 1 - \sin 2t \\ y(t) = 1 - \cos 2t \end{cases}$$

254.Differensial tenglamalar sistemasini noma’lumlarni yo‘qotish usulida yeching:

$$\begin{cases} x' = 2y, & x(0) = 0 \\ y' = -2x, & y(0) = 1 \end{cases}$$

2 13

$$\begin{cases} x(t) = \sin 2t \\ y(t) = \cos 2t \end{cases}$$

$$\begin{cases} x(t) = -\sin 2t \\ y(t) = \cos 2t \end{cases}$$

$$\begin{cases} x(t) = 2\sin 2t \\ y(t) = 2\cos 2t \end{cases}$$

$$\begin{cases} x(t) = -sh2t \\ y(t) = ch2t \end{cases}$$

255.Differensial tenglamalar sistemasini noma’lumlarni yo‘qotish usulida yeching:

$$\begin{cases} x' = 2y, & x(0) = -2 \\ y' = -2x, & y(0) = 0 \end{cases}$$

2 13

$$\begin{cases} x(t) = -2\cos 2t \\ y(t) = 2\sin 2t \end{cases}$$

$$\begin{cases} x(t) = 2\sin 2t \\ y(t) = 2\cos 2t \end{cases}$$

$$\begin{cases} x(t) = -2\cos 2t \\ y(t) = -2\sin 2t \end{cases}$$

$$\begin{cases} x(t) = 2\cos 2t \\ y(t) = -2\sin 2t \end{cases}$$

256.Differensial tenglamalar sistemasini noma’lumlarni yo‘qotish usulida yeching:

$$\begin{cases} x' = 2y, & x(0) = -1 \\ y' = -2x, & y(0) = 0 \end{cases}$$

2 13

$$\begin{cases} x(t) = -\cos 2t \\ y(t) = \sin 2t \end{cases}$$

$$\begin{cases} x(t) = -cos2t \\ y(t) = -\sin 2t \end{cases}$$

$$\begin{cases} x(t) = -\sin 2t \\ y(t) = -\cos 2t \end{cases}$$

$$\begin{cases} x(t) = -ch2t \\ y(t) = sh2t \end{cases}$$

257.Differensial tenglamalar sistemasini noma’lumlarni yo‘qotish usulida yeching:

$$\begin{cases} x' = -2y, & x(0) = -1 \\ y' = 2x, & y(0) = 0 \end{cases}$$

2 13

$$\begin{cases} x(t) = -cos2t \\ y(t) = -\sin 2t \end{cases}$$

$$\begin{cases} x(t) = -\cos 2t \\ y(t) = \sin 2t \end{cases}$$

$$\begin{cases} x(t) = -\sin 2t \\ y(t) = -\cos 2t \end{cases}$$

$$\begin{cases} x(t) = -ch2t \\ y(t) = sh2t \end{cases}$$

258.Differensial tenglamalar sistemasini noma’lumlarni yo‘qotish usulida yeching:

$$\begin{cases} x' = -2y, & x(0) = 1 \\ y' = 2x, & y(0) = 0 \end{cases}$$

2 13

$$\begin{cases} x(t) = cos2t \\ y(t) = \sin 2t \end{cases}$$

$$\begin{cases} x(t) = \cos 2t \\ y(t) = -\sin 2t \end{cases}$$

$$\begin{cases} x(t) = \sin 2t \\ y(t) = -\cos 2t \end{cases}$$

$$\begin{cases} x(t) = ch2t \\ y(t) = sh2t \end{cases}$$

259.Differensial tenglamalar sistemasini noma’lumlarni yo‘qotish usulida yeching:

$$\begin{cases} x' = -2y, & x(0) = 0 \\ y' = 2x, & y(0) = 1 \end{cases}$$

2 13

$$\begin{cases} x(t) = -\sin 2t \\ y(t) = \cos 2t \end{cases}$$

$$\begin{cases} x(t) = -\sin 2t \\ y(t) = -\cos 2t \end{cases}$$

$$\begin{cases} x(t) = -\sin 2t \\ y(t) = \cos 2t \end{cases}$$

$$\begin{cases} x(t) = ch2t \\ y(t) = -sh2t \end{cases}$$

260.Differensial tenglamalar sistemasini noma’lumlarni yo‘qotish usulida yeching:

$$\begin{cases} x' = -2y, \quad x(0) = 0 \\ y' = 2x, \quad y(0) = -1 \end{cases}$$

2 13

$$\begin{cases} x(t) = \sin 2t \\ y(t) = -\cos 2t \end{cases}$$

$$\begin{cases} x(t) = -\sin 2t \\ y(t) = \cos 2t \end{cases}$$

$$\begin{cases} x(t) = -\sin 2t \\ y(t) = -\cos 2t \end{cases}$$

$$\begin{cases} x(t) = ch2t \\ y(t) = sh2t \end{cases}$$

261.Differensial tenglamalar sistemasini noma’lumlarni yo‘qotish usulida yeching:

$$\begin{cases} x' = -2y, & x(0) = 2 \\ y' = 2x, & y(0) = 0 \end{cases}$$

2 13

$$\begin{cases} x(t) = 2cos2t \\ y(t) = 2\sin 2t \end{cases}$$

$$\begin{cases} x(t) = 2\cos 2t \\ y(t) = -2\sin 2t \end{cases}$$

$$\begin{cases} x(t) = 2\sin 2t \\ y(t) = -2\cos 2t \end{cases}$$

$$\begin{cases} x(t) = ch2t \\ y(t) = sh2t \end{cases}$$

262.Differensial tenglamalar sistemasini Eyler usulida yeching:

$$\begin{cases} x' = y - 2x \\ y' = 3x \end{cases}$$

2 13

$$\begin{cases} x = C_1e^t + C_2e^{-3t} \\ y = 3C_1e^t - C_2e^{-3t} \end{cases}$$

$$\begin{cases} x = C_1e^t + C_2e^{2t} \\ y = 3C_1e^t + 4C_2e^{2t} \end{cases}$$

$$\begin{cases} x = C_1e^t + C_2e^{2t} \\ y = 3C_1e^t - 4C_2e^{2t} \end{cases}$$

$$\begin{cases} x = C_1e^t + C_2e^{-3t} \\ y = 3C_1e^{-t} - C_2e^{3t} \end{cases}$$

263.Differensial tenglamalar sistemasini Eyler usulida yeching:

$$\begin{cases} x' = 2x + y \\ y' = 3x \end{cases}$$

2 13

$$\begin{cases} x = C_1e^{-t} + C_2e^{3t} \\ y = -3C_1e^{-t} + C_2e^{3t} \end{cases}$$

$$\begin{cases} x = C_1e^{t} + C_2e^{-3t} \\ y = 3C_1e^{t} - C_2e^{-3t} \end{cases}$$

$$\begin{cases} x = C_1e^{-t} + C_2e^{3t} \\ y = 3C_1e^{-t} + C_2e^{3t} \end{cases}$$

$$\begin{cases} x = C_1e^{t} + C_2e^{2t} \\ y = 3C_1e^{t} + 4C_2e^{2t} \end{cases}$$

264.Eyler usulida Koshi masalasini yeching:

$$\begin{cases} x' = -y + 2 \\ y' = x + 1, \end{cases} \quad x(0) = -1,\ y(0) = 0.$$

2 13

$$\begin{cases} x(t) = 2\sin t - 1 \\ y(t) = -2\cos t + 2 \end{cases}$$

$$\begin{cases} x(t) = 2\sin t + 1 \\ y(t) = -2\cos t + 2 \end{cases}$$

$$\begin{cases} x(t) = -2\sin t - 1 \\ y(t) = 2\cos t - 2 \end{cases}$$

$$\begin{cases} x(t) = \cos t - 1 \\ y(t) = \sin t + 2 \end{cases}$$

265.Eyler usulida Koshi masalasini yeching:

$$\begin{cases} x' = -y + 2 \\ y' = x + 1, \end{cases} \quad x(0) = 0,\ y(0) = 2.$$

2 13

$$\begin{cases} x(t) = \cos t - 1 \\ y(t) = \sin t + 2 \end{cases}$$

$$\begin{cases} x(t) = \sin t - 1 \\ y(t) = -\cos t + 2 \end{cases}$$

$$\begin{cases} x(t) = -\cos t + 1 \\ y(t) = -\sin t + 2 \end{cases}$$

$$\begin{cases} x(t) = \sin t \\ y(t) = \cos t + 1 \end{cases}$$

266.Eyler usulida Koshi masalasini yeching:

$$\begin{cases} x' = -y + 2 \\ y' = x - 1, \end{cases} \quad x(0) = 1,\ y(0) = 0.$$

2 13

$$\begin{cases} x(t) = 2\sin t + 1 \\ y(t) = -2\cos t + 2 \end{cases}$$

$$\begin{cases} x(t) = 2\sin t - 1 \\ y(t) = -2\cos t + 2 \end{cases}$$

$$\begin{cases} x(t) = -\sin t + 1 \\ y(t) = \cos t + 2 \end{cases}$$

$$\begin{cases} x(t) = -2\sin t + 1 \\ y(t) = -2\cos t + 2 \end{cases}$$

267.Eyler usulida Koshi masalasini yeching:

$$\begin{cases} x' = -y+1 \\ y' = x-2, \end{cases} \qquad x(0)=1,\ y(0)=1.$$

2 13

$$\begin{cases} x(t) = -\cos t + 2 \\ y(t) = -\sin t + 1 \end{cases}$$

$$\begin{cases} x(t) = 2\sin t + 1 \\ y(t) = -2\cos t + 2 \end{cases}$$

$$\begin{cases} x(t) = -\sin t + 1 \\ y(t) = \cos t + 2 \end{cases}$$

$$\begin{cases} x(t) = -\cos t + 2 \\ y(t) = \sin t + 1 \end{cases}$$

268.Eyler usulida Koshi masalasini yeching:

$$\begin{cases} x' = -y+1 \\ y' = x-2, \end{cases} \qquad x(0)=2,\ y(0)=0.$$

2 13

$$\begin{cases} x(t) = \sin t + 2 \\ y(t) = -\cos t + 1 \end{cases}$$

$$\begin{cases} x(t) = -\sin t + 2 \\ y(t) = -\cos t + 1 \end{cases}$$

$$\begin{cases} x(t) = -\cos t + 2 \\ y(t) = -\sin t + 1 \end{cases}$$

$$\begin{cases} x(t) = \sin t + 1 \\ y(t) = -\cos t + 2 \end{cases}$$

269.Differensial tenglamalar sistemasini Eyler usulida yeching:

$$\begin{cases} x' = 2x + y \\ y' = 3x + 4y \end{cases}$$

2 13

$$x = C_1 e^{t} + C_2 e^{5t}$$
$$y = -C_1 e^{t} + 3C_2 e^{5t}$$

$$x = C_1 e^{-t} + C_2 e^{5t}$$
$$y = -C_1 e^{-t} + 3C_2 e^{-5t}$$

$$x = C_1 e^{-t} + C_2 e^{5t}$$
$$y = C_1 e^{-t} + 3C_2 e^{-5t}$$

$$x = C_1 e^{t} + C_2 e^{5t}$$
$$y = C_1 e^{t} + 3C_2 e^{5t}$$

270.Differensial tenglamalar sistemasini Eyler usulida yeching:

$$\begin{cases} x' = -2x + y \\ y' = 3x - 6e^{-2t} \end{cases}$$

2 13

$$\begin{cases} x = C_1 e^{t} + C_2 e^{-3t} + 2e^{-2t} \\ y = -3C_1 e^{t} + C_2 e^{-3t} \end{cases}$$

$$\begin{cases} x = C_1 e^{t} + C_2 e^{-3t} - e^{-2t} \\ y = 3C_1 e^{t} - C_2 e^{-3t} - 3e^{-2t} \end{cases}$$

$$\begin{cases} x = C_1 e^{-t} + C_2 e^{3t} + 2e^{-2t} \\ y = -3C_1 e^{-t} + 2C_2 e^{3t} - 2e^{-2t} \end{cases}$$

$$\begin{cases} x = C_1e^{-t} + C_2e^{3t} + 2e^{2t} \\ y = -3C_1e^{-t} + C_2e^{3t} \end{cases}$$

271.Differensial tenglamalar sistemasini Eyler usulida yeching:

$$\begin{cases} x' = 2x + y \\ y' = 3x - 4e^{t} \end{cases}$$

2 13

$$\begin{cases} x = C_1e^{-t} + C_2e^{3t} - e^{t} \\ y = -3C_1e^{-t} + C_2e^{3t} + e^{t} \end{cases}$$

$$\begin{cases} x = C_1e^{-t} + C_2e^{3t} - 2e^{t} \\ y = -3C_1e^{-t} + C_2e^{3t} + 2e^{t} \end{cases}$$

$$\begin{cases} x = C_1e^{t} + C_2e^{-3t} - e^{t} \\ y = -3C_1e^{t} + C_2e^{-3t} + e^{t} \end{cases}$$

$$\begin{cases} x = C_1e^{t} + C_2e^{-3t} - 2e^{t} \\ y = -3C_1e^{t} + C_2e^{-3t} + 2e^{t} \end{cases}$$

272.Operatsion hisob yordamida Koshi masalasini yechishning imkoni bormi?

$$x'' - 9x = \frac{1}{t^2} \quad x(0) = 1; \; x'(0) = 1;$$

3 14

yo'q

ha

bo'lishi mumkin

barcha javoblar to'g'ri

273Operatsion hisob yordamida Koshi masalasini

yeching.

$$x'' - 5x' + 6x = 0$$
$$x(0) = 0\,;\;\; x'(0) = 1;$$

3 14

$e^{3t} - e^{2t}$

$e^{4t} - e^{3t}$

$2e^{3t} - e^{5t}$

$2e^{3t} - te^{2t}$

274.Operatsion hisob yordamida Koshi masalasini yeching.

$$x'' + 2x' - 15x = 0$$
$$x(0) = 0;\;\; x'(0) = 1;$$

3 14

$e^{3t} - e^{-5t};$

$2(e^{3t} - e^{2t})$

$e^{5t} - e^{3t}$

$3e^{3t} - 2e^{5t}$

275.Operatsion hisob yordamida Koshi masalasini yeching.

$$x'' - 5x' + 6x = 0$$
$$x(0) = 0;\;\; x'(0) = 2;$$

3 14

$2(e^{3t} - e^{2t})$

$e^{3t} - e^{2t}$

$e^{4t} - e^{3t}$

$3e^{3t} - 2e^{2t}$

276.Operatsion hisob yordamida Koshi masalasini yeching.

$x'' + x = 0$

$x(0) = 0\,;\;\; x'(0) = 1;$

3 14

$sint$

$cost$

$2e^{t}$

$e^{3t}sint$

277.Operatsion hisob yordamida Koshi masalasini yeching.

$x'' + x = 2e^{t}$

$x(0) = 0;\;\; x'(0) = 0;$

3 14

$e^{t} - (cost + sint);$

$2(e^{t} - e^{2t}) + cost;$

$e^{t} + sin2t - e^{3t}$

$-2e^{2t} + sint - cos2t$

278.Operatsion hisob yordamida Koshi masalasini yeching.

$x' - x = 0 \quad\; x(0) = 1;$

3 14

$e^t$

$2cos2t;$

$2(e^{3t}cos2t - e^{2t});$

$\frac{31e^{5t}}{29}$

2Operatsion hisob yordamida Koshi masalasini yeching.

$x'' + x' = 0 \quad x(0) = 0; \; x'(0) = 1$

3 14

$1 - e^{-t}$

$1 - e^{2t}$

$3 - e^{2t}$

$2 - e^{-t}$

Operatsion hisob yordamida Koshi masalasini yeching.

$x'' - 2x' + 5x = 0$

$x(0) = 0\,; \; x'(0) = 2;$

3 14

$e^t sin2t$

$2e^{3t}sint$

$e^{4t}cos2t;$

$e^t - sin2t$

Operatsion hisob yordamida Koshi masalasini yeching.

$$x'' - 9x = 0$$

$$x(0) = 0; \; x'(0) = 1$$

3 14

$$\frac{1}{6}(\, e^{3t} - e^{-3t})$$

$$2e^{t} - 3e^{3t}$$

$$\frac{1}{2}(\, e^{3t} - e^{-3t})$$

$$3e^{3t} - 2e^{-3t}$$

Operatsion hisob yordamida Koshi masalasini yeching.

$$x'' - 9x' = 0$$

$$x(0) = 0; \; x'(0) = 1;$$

3 14

$$\frac{1}{9}(e^{9t} - 1)$$

$$\frac{1}{9}e^{-3t}sint + e^{9t}$$

$$\frac{2}{9}e^{3t}cos9t + \; e^{-9t};$$

$$\frac{1}{9}e^{-3t} + cos9t$$

Operatsion hisob yordamida Koshi masalasini yeching.

$$x'' + 2x' = e^{t} \quad x(0) = 0; \; x'(0) = 1;$$

3 14

$$\frac{e^{t}}{3} - \frac{e^{-2t}}{3}$$

$$\frac{2}{3}(e^{3t} - e^{2t})$$

$\frac{e^{4t}-e^{3t}}{3}$

$e^{3t} - \frac{2e^{2t}}{3}$

Operatsion hisob yordamida Koshi masalasini yeching.

$x'' + 4x' + 8x = 0$

$x(0) = 0\,; \;\; x'(0) = 2;$

3 14

$e^{-2t} sin2t$

$e^{-2t} cos2t$

$2e^{t} cos2t$

$e^{3t} sin2t$

Operatsion hisob yordamida Koshi masalasini yeching.

$x'' - 8x' = 2e^{2t} \quad x(0) = 0; \;\; x'(0) = 1;$

3 14

$\frac{e^{8t}}{6} - \frac{e^{2t}}{6}$

$\frac{1}{6}(e^{3t} - e^{2t})$

$\frac{e^{4t}-e^{3t}}{8}$

$\frac{e^{8t}}{6} - \frac{e^{2t}}{6}$

Operatsion hisob yordamida Koshi masalasini yeching.

$x'' + 4x' = 0$

$x(0) = 0\,;\ \ x'(0) = 1;$

3 14

$\frac{1}{4} - \frac{e^{-4t}}{4}$

$\frac{1}{4}(e^{4t} - e^{2t})$

$\frac{1}{4}(e^{4t} - e^{4t})$

$2e^{t}$

Operatsion hisob yordamida Koshi masalasini yeching.

$x'' - 4x' + 5x = 0 \quad x(0) = 0;\ \ x'(0) = 1;$

3 14

$e^{2t}sint$

$e^{3t}cost$

$-e^{5t}$sin2t

$e^{4t} - e^{3t}$

Operatsion hisob yordamida Koshi masalasini yeching.

$x'' + 5x' + 6x = 0$

$x(0) = 0\,;\ \ x'(0) = 1;$

3 14

$e^{-2t} - e^{-3t};$

$e^{4t} - e^{3t}$

$\frac{e^{-2t}-e^{-3t}}{3}$;

$2e^{2t} - sin3t$

Operatsion hisob yordamida Koshi masalasini yeching.

$x'' + 4x' + 5x = 0 \quad x(0) = 0; \; x'(0) = -2;$

3 14

$-2e^{-2t}sint$ ;

$e^{4t}cos3t$

$-e^{5t}$sin2t

$e^{2t}sint$

29Operatsion hisob yordamida Koshi masalasini yeching.

$x' - 5x = 0$

$x(0) = 3$ ;

3 14

$3e^{5t}$

$e^{5t} + sint$;

$2e^{3t}$

$e^{3t} - cos3t$

291.Operatsion hisob yordamida Koshi masalasini yeching.

$x'' + 5x' = 0 \quad x(0) = 0; \; x'(0) = 5;$

3 14

$1 - e^{-5t}$

$cht - e^{2t}$

$sin2t - 1$

$1 - cos5t$

Savollar va javoblar Qiyinlilik darajasi Shablondagi nomeri Ta'lim natijalari Tematik ta'lim natijalari

Differensial tenglamaning xususiy yechimini toping

$3y' + y = 0 \quad y(0) = 2$

1 1

$y = 2e^{-\frac{x}{3}}$

$y = 2 + x^3$

$y = 2e^{-3x}$

$y = 2e^{\frac{x}{3}}$

Differensial tenglamaning xususiy yechimini toping.

$3y' - y = 0 \quad y(0) = 2$

1 1

$y = 2e^{\frac{x}{3}}$

$y = 2 + x^3$

$y = 2e^{-3x}$

$y = 2e^{-\frac{x}{3}}$

Differensial tenglamaning xususiy yechimini toping

$\sqrt{y}dx - \sqrt{x}dy = 0, \ y(0) = 1$

1 1

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

$y = 2\sqrt{x} + 1$

$y=(x-1)^2$

$y=\frac{x+3}{3}$

Differensial tenglamaning xususiy yechimini toping

$y'=4\sqrt{y}, \quad y(0)=9$

1 1

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

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

$y=2x+9$

$y=\frac{1}{9}(2x+9)^2$

Differensial tenglamaning xususiy yechimini toping

$y'=4\sqrt{y}, \quad y(0)=4$

1 1

$y=4(x+1)^2$

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

$y=(x^2+2)^2$

$y=4(2x+1)^2$

Differensial tenglamaning xususiy yechimini toping

$y'=4x\sqrt{y}, \quad y(0)=9$

1 1

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

$y = 9(x^2 + 1)^2$

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

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

Differensial tenglamaning xususiy yechimini toping

$y' = 4x\sqrt{y}, \quad y(0) = 1$

1 1

$y = (x^2 + 1)^2$

$y = (2x^2 + 1)^2$

$y = (2x + 1)^2$

$y = \frac{1}{9}(x^2 + 3)^2$

Differensial tenglamaning xususiy yechimini toping

$xy' - y \ln y = 0, \; y(1) = e^2$

1 1

$y = e^{2x}$

$y = x \cdot e^2$

$y = e^{x+1}$

$y = x \cdot e^{2x}$

Differensial tenglamaning xususiy yechimini toping

$y' = xy, \quad y(0) = 4$

1 1

$y = 4e^{\frac{x^2}{2}}$

$y = e^{x^2} + 3$

$y = 4e^{2x}$

$y = e^{x} + 3$

Differensial tenglamaning umumiy yechimini toping

$y' = 5^{x-y}$

1 1

$y = \log_5 (C + 5^x)$

$y = 2\log_5 (x + C)$

$y = \log_5 x + C$

$y = \log_5 (x + 5^x) + C$

Differensial tenglamaning umumiy yechimini toping

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

1 1

$y = \log_3 (C + 3^x)$

$y = 2\log_3 (x + C)$

$y = \log_3 x + C$

$y = \log_3 (x + 3^x) + C$

Differensial tenglamaning umumiy yechimini toping

$y' = \frac{y+1}{x+1}$

1 1

$y = -1 + C(x+1)$

$y = x + C$

$y = C(x+1)$

$y = 1 + C(x+1)$

Differensial tenglamaning umumiy yechimini toping

$y' + y = 5$

1 1

$y = 5 + Ce^{-x}$

$y = Ce^{-x} - 5$

$y = C(e^{-x} + 5x)$

$y = 5 + Ce^{x}$

Differensial tenglamaning xususiy yechimini toping

$\frac{dx}{4} + \frac{dy}{\sin x} = 0, \quad y(0) = -1$

1 1

$y = \frac{1}{4}\cos x - 1\frac{1}{4}$

$y = -\frac{1}{4}\cos x - \frac{3}{4}$

$y = \frac{1}{4}\sin x - 1$

$y = -\cos x$

Differensial tenglamaning xususiy yechimini toping

$\frac{dx}{4} + \frac{dy}{\sin x} = 0, \quad y(0) = 1$

1 1

$y = \frac{1}{4}\cos x + \frac{3}{4}$

$y = -\frac{1}{4}\cos x + 1\frac{1}{4}$

$y = \frac{1}{4}\sin x + 1$

$y = \cos x$

Differensial tenglamaning xususiy yechimini toping

$e^y y' + 1 = 0$, $y(0) = \ln 2$

1 1

$y = \ln(2 - x)$

$y = \ln(2 + x)$

$y = \frac{1}{2}\ln(4 - x)$

$y = \frac{1}{2}\ln(4 + x)$

Differensial tenglamaning xususiy yechimini toping

$\frac{dx}{4} + \frac{dy}{\cos x} = 0$, $y(0) = 1$

1 1

$y = -\frac{1}{4}\sin x + 1$

$y = \frac{1}{4}\sin x + 1$

$y = -\frac{1}{4}cosx + \frac{1}{4}$

$y = 1 - \sin x$

Differensial tenglamaning xususiy yechimini toping

$(1 - e^{2x})dx = e^x dy$, $y(0) = -1$

1 1

$y = 1 - e^{-x} - e^{x}$

$y = -1 + e^{-x} - e^{x}$

$y = -1 - e^{-x} + e^{x}$

$y = -1 + xe^{2x}$

Differensial tenglamaning xususiy yechimini toping

$(1+e^{2x})dx = e^{x}dy,\ y(0) = -1$

1 1

$y = -1 - e^{-x} + e^{x}$

$y = -1 + e^{-x} - e^{x}$

$y = 1 - e^{-x} - e^{x}$

$y = -1 + xe^{2x}$

Differensial tenglamaning xususiy yechimini toping

$(1+e^{2x})dx = e^{x}dy,\ y(0) = 1$

1 1

$y = 1 - e^{-x} + e^{x}$

$y = 1 + e^{-x} - e^{x}$

$y = -1 + e^{-x} + e^{x}$

$y = 1 + xe^{2x}$

Erkli o‘zgaruvchi, noma’lum funksiya va uning hosilalari yoki differensiallarini bog‘lovchi tenglamaga … deyiladi.

1 2

differensial tenglama

umumiy yechim

xususiy yechim

tartibi

Agar noma’lum funksiya faqat bitta o‘zgaruvchiga bog‘liq bo‘lsa, bunday differensial tenglamaga … differensial tenglama deyiladi

1 2

oddiy

tartibli

umumiy yechimli

xususiy yechimli

Agar noma’lum funksiya ikki yoki undan ortiq o‘zgaruvchiga bog‘liq bo‘lsa, bunday differensial tenglamaga … differensial tenglama deyiladi.

1 2

xususiy hosilali

oddiy

yuqori tartibli

o‘zgaruvchan

Differensial tenglamada qatnashgan hosilalarning eng yuqori tartibi tenglamaning … deyiladi.

1 2

tartibi

xususiy yechimi

chegarasi

umumiy yechimli

Birinchi tartibli differensial tenglamani to‘g‘ri tenglikka aylantiruvchi $y = \varphi(x, C)$

funksiyaga tenglamaning … deyiladi.

1 2

umumiy yechimi

hususiy yechimi

tartibi

chegarasi

Quyidagilardan qaysi biri birinchi tartibli differensial tenglama uchun Koshi masalasi?

1 2

$$\begin{cases} y' = f(x,y) \\ y\big|_{x=x_0} = y_0 \end{cases}$$

$$\begin{cases} y' = f(x,y) \\ y = \varphi(x) \end{cases}$$

$$\begin{cases} y' = f(x,y) \\ y(a) = A; y(b) = B \end{cases}$$

$$\begin{cases} y' = f(x,y) \\ a < x < b \end{cases}$$

Tenglamaning tipini aniqlang:

$y' = f_1(x) f_2(y)$

1 2

O‘zgaruvchilari ajraladigan

Chiziqli

Bir jinsli

Bernulli

Chiziqli differensial tenglamani qaysi usulda yechiladi?

1 2

Bernulli

Gauss

Kramer

Nyuton

Chiziqli differensial tenglamani qaysi usulda yechiladi?

1 2

Lagranj

Kramer

Gauss

Nyuton

$f(x, y)$ funksiya qachon k tartibli bir jinsli funksiya deyiladi?

1 2

$f(\lambda x, \lambda y) = \lambda^k f(x, y)$

$f(\lambda x, \lambda y) = \lambda f(x, y)$

$f(\lambda x, \lambda y) = k^\lambda f(x, y)$

$f(\lambda x, \lambda y) = (\lambda k) f(x, y)$

$y' + P(x)y = Q(x)$ tenglamanini yechishning Bernulli usulida qanday almashtirish bajariladi?

1 2

$y = uv$

$y = p'$

$y = \varphi(x)$

$y' = pp'$

$y' + P(x)y = Q(x)$ tenglamanini yechishning Lagranj usulida umumiy yechim … ko`rinishda izlanadi

1 2

$y = C(x)e^{-\int P(x)dx}$

$y = C(x)e^{\int P(x)dx}$

$y = C(x)e^{P(x)}$

$y = e^{-\int P(x)dx}$

Agar birinchi tartibli $y' = f(x, y)$ differensial tenglamaning o‘ng tomoni x va y ga nisbatan …bir jinsli funksiya bo‘lsa, bunday tenglama bir jinsli DT deyiladi.

1 2

nol o‘lchovli

chiziqli

uzluksiz

xususiy yechimli

Quyidagilarni qaysi biri 1-tartibli chiziqli differensial tenglamaning umumiy ko‘rinishi?

1 2

$y' + P(x)y = Q(x)$

$y' + P(x)y = Q(y)$

$y' + P(x)y = Q(x)y^n$

$y' + P(y)x = 0$

$y' = \frac{a_1x + b_1y + c_1}{a_2x + b_2y + c_2}$ tenglama qachon bir jinsli differensial tenglamaga keladi?

1 2

$\begin{vmatrix} a_1 & b_1 \\ a_2 & b_2 \end{vmatrix} \neq 0$

$\begin{vmatrix} a_1 & b_1 \\ a_2 & b_2 \end{vmatrix} = 0$

$$\begin{vmatrix} c_1 & b_1 \\ c_2 & b_2 \end{vmatrix} \neq 0$$

$$\begin{vmatrix} a_1 & c_1 \\ a_2 & c_2 \end{vmatrix} \neq 0$$

Ushbu $y' + P(x)y = 0$ tenglama … DT bo‘ladi.

1 2

chiziqli bir jinsli

Rikatti

to‘la differensial

Bernulli

Bernuli tenglamasini aniqlang.

1 2

$y' + P(x)y = Q(x)y^n$

$y' + P(x)y = Q(x)$

$y = xy' + \psi(y')$

$y = x\varphi(y') + \psi(y')$

Lagranj tenglamasini aniqlang

1 2

$y = x\varphi(y') + \psi(y')$

$y' + P(x)y = Q(x)y^n$

$y' + P(x)y = Q(x)$

$y = xy' + \psi(y')$

Klero tenglamasini aniqlang

1 2

$y = xy' + \psi(y')$

$y = x\varphi(y') + \psi(y')$

$y' + P(x)y = Q(x)y^n$

$y' + P(x)y = Q(x)$

Bernulli tenglamasi qaysi almashtirish yordamida chiziqliga keltiriladi?

1 2

$z = y^{-n+1}$,
$z' = (-n+1)y^{-n}y'$

$y = uv$

$y = e^{kx}$

$y = p'$, $y'' = pp'$

Ushbu $y' = \dfrac{x+y+3}{x+2}$ tenglamani bir jinsliga keltirish uchun qanday almashtirish bajariladi?

1 3

$\begin{cases} x = x_1 - 2 \\ y = y_1 - 1 \end{cases}$

$\begin{cases} x = x_1 + 2 \\ y = y_1 + 1 \end{cases}$

$\begin{cases} x = x_1 + 2 \\ y = y_1 - 1 \end{cases}$

$\begin{cases} x = x_1 - 2 \\ y = y_1 + 1 \end{cases}$

Ushbu $y' = \dfrac{2x+3y-1}{x+y}$ tenglamani bir jinsliga keltirish uchun qanday almashtirish bajariladi?

1 3

$\begin{cases} x = x_1 - 1 \\ y = y_1 + 1 \end{cases}$

$$\begin{cases} x = x_1 + 1 \\ y = y_1 - 1 \end{cases}$$

$$\begin{cases} x = x_1 - 1 \\ y = y_1 - 1 \end{cases}$$

$$\begin{cases} x = x_1 + 1 \\ y = y_1 + 1 \end{cases}$$

Quyidagilarni qaysi biri bir jinsli differnsial tenglamaga keltiriladigan tenglama?

1 3

$$y' = \frac{2x + y + 1}{2x + 3y - 1}$$

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

$$y' = \frac{5 - 4x - 2y}{3 + x + 2y}$$

$$y' = \frac{2y}{x^2 + 1}$$

Ushbu $y' = \frac{2x + y - 2}{x - 2}$ tenglamani bir jinsliga keltirish uchun qanday almashtirish bajariladi?

1 3

$$\begin{cases} x = x_1 + 2 \\ y = y_1 - 2 \end{cases}$$

$$\begin{cases} x = x_1 + 2 \\ y = y_1 + 2 \end{cases}$$

$$\begin{cases} x = x_1 - 2 \\ y = y_1 - 2 \end{cases}$$

$$\begin{cases} x = x_1 - 2 \\ y = y_1 + 2 \end{cases}$$

Qaysi almashtirish ushbu $y' = \dfrac{x+y+1}{2x+2y}$ tenglamani o‘zgaruvchilari ajraladigan tenglamaga keltiradi?

1 3

$x + y + 1 = u$

$x + y + 1 = xu$

$y = ux - 1$

$y = ux + 1$

Ushbu $y' = \dfrac{x-2y+1}{y-1}$ tenglamani bir jinsliga keltirish uchun qanday almashtirish bajariladi?

1 3

$$\begin{cases} x = x_1 + 1 \\ y = y_1 + 1 \end{cases}$$

$$\begin{cases} x = x_1 - 1 \\ y = y_1 + 1 \end{cases}$$

$$\begin{cases} x = x_1 + 1 \\ y = y_1 - 1 \end{cases}$$

$$\begin{cases} x = x_1 - 1 \\ y = y_1 - 1 \end{cases}$$

Ushbu $y' = \dfrac{x+y-3}{x-2y}$ tenglamani bir jinsliga keltirish uchun qanday almashtirish bajariladi?

1 3

$$\begin{cases} x = x_1 + 2 \\ y = y_1 + 1 \end{cases}$$

$$\begin{cases} x = x_1 - 2 \\ y = y_1 + 1 \end{cases}$$

$$\begin{cases} x = x_1 + 2 \\ y = y_1 - 1 \end{cases}$$

$$\begin{cases} x = x_1 - 2 \\ y = y_1 - 1 \end{cases}$$

Quyidagilarni qaysi biri bir jinsli differnsial tenglamaga keltiriladigan tenglama?

1 3

$$y' = \frac{2x - y - 5}{x + 2y}$$

$$y' = \sin(x + y)$$

$$y' = \frac{2 - 3x - 3y}{3 + x + y}$$

$$y' = \frac{y}{x^2 + 1}$$

Ushbu $y' = \dfrac{x - 5y + 4}{x - y}$ tenglamani bir jinsliga keltirish uchun qanday almashtirish bajariladi?

1 3

$$\begin{cases} x = x_1 + 1 \\ y = y_1 + 1 \end{cases}$$

$$\begin{cases} x = x_1 - 1 \\ y = y_1 + 1 \end{cases}$$

$$\begin{cases} x = x_1 + 1 \\ y = y_1 - 1 \end{cases}$$

$$\begin{cases} x = x_1 - 1 \\ y = y_1 - 1 \end{cases}$$

Qaysi almashtirish ushbu $y' = \dfrac{3x + 3y - 1}{x + y - 1}$ tenglamani o‘zgaruvchilari ajraladigan tenglamaga keltiradi?

1 3

$x + y - 1 = u$

$x + y - 1 = xu$

$y = ux + 1$

$y = ux - 1$

Ushbu $\begin{cases} x = x_1 + 1 \\ y = y_1 + 1 \end{cases}$ almashtirish yordamida qaysi tenglama bir jinsliga keltiriladi?

1 3

$$y' = \frac{x - 5y + 4}{x - y}$$

$$y' = \frac{2x - y - 5}{x + 2y}$$

$$y' = \frac{2 - 3x - 3y}{3 + x + y}$$

$$y' = \frac{x + y - 3}{x - 2y}$$

Ushbu $\begin{cases} x = x_1 + 2 \\ y = y_1 + 1 \end{cases}$ almashtirish yordamida qaysi tenglama bir jinsliga keltiriladi?

1 3

$$y' = \frac{x + y - 3}{x - 2y}$$

$$y' = \frac{x - 5y + 4}{x - y}$$

$$y' = \frac{2x - y - 5}{x + 2y}$$

$$y' = \frac{2 - 3x - 3y}{3 + x + y}$$

Ushbu $\begin{cases} x = x_1 - 1 \\ y = y_1 - 1 \end{cases}$ almashtirish yordamida qaysi tenglama bir jinsliga keltiriladi?

1 3

$$y' = \frac{x + 2y + 3}{x - 2y - 1}$$

$$y' = \frac{x + y - 3}{x - 2y}$$

$$y' = \frac{x - 5y + 4}{x - y}$$

$$y' = \frac{2x - y - 5}{x + 2y}$$

Ushbu $\begin{cases} x = x_1 + 2 \\ y = y_1 - 2 \end{cases}$ almashtirish yordamida qaysi tenglama bir jinsliga keltiriladi?

1 3

$$y' = \frac{2x + y - 2}{x - 2}$$

$$y' = \frac{x + 2y + 3}{x - 2y - 1}$$

$$y' = \frac{x + y - 3}{x - 2y}$$

$$y' = \frac{2x - y - 5}{x + 2y}$$

Ushbu $\begin{cases} x = x_1 - 2 \\ y = y_1 + 1 \end{cases}$ almashtirish yordamida qaysi tenglama bir jinsliga keltiriladi?

1 3

$$y' = \frac{x + 2y}{x + y + 1}$$

$$y' = \frac{2x + y - 2}{x - 2}$$

$$y' = \frac{x + y - 3}{x - 2y}$$

$$y' = \frac{2x - y - 5}{x + 2y}$$

Ushbu $\begin{cases} x = x_1 + 2 \\ y = y_1 - 1 \end{cases}$ almashtirish yordamida qaysi tenglama bir jinsliga keltiriladi?

1 3

$$y' = \frac{2x - y - 5}{x + 2y}$$

$$y' = \frac{x + 2y}{x + y + 1}$$

$$y' = \frac{2x + y - 2}{x - 2}$$

$$y' = \frac{x + y - 3}{x - 2y}$$

Ushbu $\begin{cases} x = x_1 - 2 \\ y = y_1 + 3 \end{cases}$ almashtirish yordamida qaysi tenglama bir jinsliga keltiriladi?

1 3

$$y' = \frac{2x + y + 1}{3x + 2y}$$

$$y' = \frac{x + 2y}{x + y + 1}$$

$$y' = \frac{2x - y - 5}{x + 2y}$$

$$y' = \frac{x + y - 1}{2x + y - 4}$$

Ushbu $\begin{cases} x = x_1 + 3 \\ y = y_1 - 2 \end{cases}$ almashtirish yordamida qaysi tenglama bir jinsliga keltiriladi?

1 3

$$y' = \frac{x + y - 1}{2x + y - 4}$$

$$y' = \frac{2x + y + 1}{3x + 2y}$$

$$y' = \frac{x + 2y}{x + y + 1}$$

$$y' = \frac{2x - y - 5}{x + 2y}$$

Ushbu $\begin{cases} x = x_1 + 2 \\ y = y_1 + 2 \end{cases}$ almashtirish yordamida qaysi tenglama bir jinsliga keltiriladi?

1 3

$$y' = \frac{2x - y - 2}{x + y - 4}$$

$$y' = \frac{x + y - 1}{2x + y - 4}$$

$$y' = \frac{3x + y + 8}{x + 2y + 6}$$

$$y' = \frac{x + 2y}{x + y + 1}$$

Ushbu $\begin{cases} x = x_1 - 2 \\ y = y_1 - 1 \end{cases}$ almashtirish yordamida qaysi tenglama bir jinsliga keltiriladi?

1 3

$$y' = \frac{x + y + 3}{x + 2y + 4}$$

$$y' = \frac{x + y - 1}{2x + y - 4}$$

$$y' = \frac{3x + y + 8}{x + 2y + 6}$$

$$y' = \frac{x + y - 3}{x - 2y}$$

Asl funksiyaning tasvirini toping

$$e^{3t}cos5t$$

1 4

$$\frac{p-3}{(p-3)^2+5^2}$$

$$\frac{p-5}{(p-5)^2+2^2}$$

$$\frac{p-2}{(p-5)^2+2^2}$$

$$\frac{p-5}{(p-2)^2+5^2}$$

Asl funksiyaning tasvirini toping

$$t+e^{2t}sin5t.$$

1 4

$$\frac{1}{p^2}+\frac{5}{(p-2)^2+5^2}$$

$$\frac{p-2}{(p-2)^2+5^2}$$

$$\frac{1}{p}+\frac{p}{p^2+5^2}$$

$$\frac{1}{p^2}+\frac{p}{p^2+5^2}$$

Asl funksiyaning tasvirini toping

$$t+cos5t.$$

1 4

$$\frac{1}{p^2}+\frac{p}{p^2+5^2}$$

$$\frac{1}{p^2}+\frac{p-5}{(p-5)^2+2^2}$$

$$\frac{1}{p^2}+\frac{p-5}{(p-5)+2}$$

$$\frac{1}{p^2}+\frac{p-2}{(p-2)^5+2^5}$$

Asl funksiyaning tasvirini toping

$$t^3+2e^{-2t}+3t^2.$$

1 4

$$\frac{6}{p^4}+\frac{2}{p+2}+\frac{6}{p^3}$$

$$\frac{1}{p^4}+\frac{1}{p+2}+\frac{2}{p^3}$$

$$\frac{1}{p^4}+\frac{4}{p+2}+\frac{2}{p^3}$$

$$\frac{1}{p^4}+\frac{3}{p+2}+\frac{2}{p^3}$$

Asl funksiyaning tasvirini toping

$$t+3e^{-2t}+t^2$$

1 4

$$\frac{1}{p^2}+\frac{3}{p+2}+\frac{2}{p^3}$$

$$\frac{6}{p^4}+\frac{2}{p+2}+\frac{6}{p^3}$$

$\frac{1}{p^4}+\frac{1}{p+2}+\frac{2}{p^3}$

$\frac{1}{p^2}+\frac{6}{p^4}+\frac{2}{p+2}$

Asl funksiyaning tasvirini toping

$e^t+3cos3t-sin8t.$

1 4

$\frac{1}{p-1}+\frac{3p}{p^2+9}-\frac{8}{p^2+64}$

$\frac{1}{p^2-1}+\frac{1}{p-1}-\frac{8}{p^3+64}$

$\frac{1}{p^2-1}+\frac{1}{p-1}-\frac{8}{p^3+8}$

$\frac{1}{p^4}+\frac{3}{p+2}-\frac{8}{p^3+16}$

Asl funksiyaning tasvirini toping

$t+2sin4t+cost.$

1 4

$\frac{1}{p^2}+\frac{8}{p^2+4^2}+\frac{p}{p^2+1^2}$

$\frac{1}{p^2}+\frac{4}{p^2+4^2}+\frac{p+1}{p^2+1^2}$

$\frac{1}{p^2}+\frac{8}{p^2+4^2}+\frac{p+1}{p^2+1^2}$

$\frac{1}{p^2}+\frac{8}{p^2+4^2}+\frac{p+2}{p^2+12^2}$

Asl funksiyaning tasvirini toping

$t^2 + t^2 e^{2t}$.

1 4

$\frac{2}{p^3} + \frac{2}{(p-2)^3}$

$\frac{2}{p+2} + \frac{6}{p^3}$

$\frac{2}{p^3} + \frac{2}{(p+2)^3}$

$\frac{1}{p^4} + \frac{2}{p^2}$

Asl funksiyaning tasvirini toping

$e^{-2t} + 3t$.

1 4

$\frac{1}{p+2} + \frac{3}{p^2}$

$\frac{2}{p+2} + \frac{6}{p^3}$

$\frac{3}{p+3} + \frac{2}{p^3}$

$\frac{1}{p^4} + \frac{3}{p+2} + \frac{2}{p^3}$

Asl funksiyaning tasvirini toping

$t^3 + 2e^{-2t} sint$.

1 4

$\frac{6}{p^4} + \frac{2}{(p+2)^2+1^2}$

$\frac{6}{p^2} + \frac{2}{(p-2)^2+1^2}$

$\frac{2}{(p+2)^2+1^2} + \frac{2}{p^3}$

$\frac{3}{p+2} + \frac{2}{(p+2)^2+1^2}$

Tasvirga qanday asl funksiya mos keladi

$\frac{1}{p^2-5p+6}$

1 4

$e^{3t} - e^{2t}$

$2e^{3t} - e^{5t}$

$e^{4t} - e^{3t}$

$\frac{e^{3t}-e^{2t}}{3}$

Tasvirga qanday asl funksiya mos keladi

$\frac{1}{(p-3)(p-5)} + \frac{2}{p^2+4}$

1 4

$\frac{e^{5t}}{2} - \frac{e^{3t}}{2} + sin2t$

$e^{3t} - e^{5t} + sin2t$

$\frac{e^{5t}}{2} - \frac{e^{3t}}{2} + cos2t$

$$\frac{e^{5t}}{2}+\frac{e^{3t}}{2}+sin2t$$

Tasvirga qanday asl funksiya mos keladi

$$\frac{1}{p^2-5p+6}+\frac{p}{p^2+4}.$$

1 4

$$e^{3t}-e^{2t}+cos2t;$$

$$\frac{e^{5t}}{2}-\frac{e^{2t}}{2}+sin2t$$

$$\frac{e^{3t}-e^{2t}}{3}+cos2t$$

$$e^{4t}-e^{3t}+cos2t;$$

Tasvirga qanday asl funksiya mos keladi

$$\frac{1}{(p-2)^2+1}.$$

1 4

$$e^{2t}sint$$

$$e^{t}cost$$

$$-e^{t}sin2t$$

$$te^{4t}+cost$$

Tasvirga qanday asl funksiya mos keladi

$$\frac{p+4}{(p+4)^2+4}+\frac{2}{p-2}$$

1 4

$e^{-4t}cos2t + 2e^{2t}$

$e^{-4t}cos2t + sin2t;$

$2e^{3t} - e^{5t}cos2t;$

$e^{-4t}cos2t + 2e^{3t}$

Tasvirga qanday asl funksiya mos keladi

$\frac{p-2}{(p-2)^2+1}.$

1 4

$e^{2t}cos2t$

$e^{2t}sint$

$e^{2t}cos2t$

$\frac{e^{2t}}{2}sin2t;$

Tasvirga qanday asl funksiya mos keladi

$\frac{3}{p^2+9} - \frac{6}{p^4} + \frac{p}{p^2+4}.$

1 4

$sin3t - t^3 + cos2t;$

$sin3t - cos2t + t^2;$

$cost - \frac{e^{4t}}{2} + sin3t$

$e^{3t} - t^2 + cos2t;$

Tasvirga qanday asl funksiya mos keladi

$\frac{p-2}{(p-2)^2+9}+\frac{2}{p^3}-\frac{2}{p-6}$.

1 4

$e^{2t}cos3t+t^2-2e^{6t}$

$e^{2t}cos3t+t^4-2e^{6t}$;

$-t^4+cos3t+2e^{6t}$

$e^{2t}cos3t+t^4-tsint$

Tasvirga qanday asl funksiya mos keladi

$\frac{p^2-4}{(p^2+4)^2}$.

1 4

$tcos2t$;

$tsin2t$;

$tcost$;

$2tcos2t$

Tasvirga qanday asl funksiya mos keladi

$\frac{2p}{(p^2+1)^2}-\frac{2p}{p^2-16}$.

1 4

$tsint-2ch4t$;

$tcost+sint$

$sint-2ch4t$

$\boldsymbol{tsint}$ $-$sh2t;

$F\left(x,y^{(k)},y^{(k+1)},\ldots,y^{(n)}\right)=0$ tenglama tartibini pasaytirganda hosil bo`lgan tenglamaning tartibini aniqlang

1 5

$n-k$

$n^2$

$k$

$n-k^2$

$F\left(x,y^{(k)},y^{(k+1)},\ldots,y^{(n)}\right)=0$ tenglamaning tartibini pasaytirish uchun qanday almashtirish bajariladi?

1 5

$z=y^{(k)},\ z'=y^{(k+1)}\ ,\ldots,$
$z^{(n-k)}=y^{(n)}$ almashtirish bajariladi

$z=y'$
almashtirish bajariladi

$z=y'+1$
almashtirish bajariladi

$z^2=y'$ almashtirish bajariladi

Agar n - tartibli differensial tenglamada … 1–darajada qatnashsa, bunday tenglama yuqori tartibli chiziqli differensial tenglama deyiladi.

1 5

noma’lum  funksiya va uning hosilalari

noma’lum  funksiya

noma’lum  funksiyaning hosilalari

noma’lum funksiya qatnashmagan hadi

Agar differensial tenglamalar sistemasi ikki noma‘lumli normal sistema bo‘lsa, uning  umumiy yechimining ko‘rinishini aniqlang.

1 5

$$\begin{cases} y = \varphi_1(x, C_1, C_2) \\ z = \varphi_2(x, C_1, C_2) \end{cases}$$

$$\begin{cases} y = \varphi_1(x, z, C_1, C_2) \\ z = \varphi_2(x, y, C_1, C_2) \end{cases}$$

$$\begin{cases} y = \varphi_1(x, C_1) \\ z = \varphi_2(x, C_2) \end{cases}$$

$$\begin{cases} y = \varphi_1(x, z, C_1) \\ z = \varphi_2(x, y, C_2) \end{cases}$$

Agar bir vaqtda nolga teng bo‘lmagan n ta $\alpha_1, \alpha_2, \dots, \alpha_n$ sonlar mavjud bo‘lib,

$\alpha_1 \cdot y_1 + \alpha_2 \cdot y_2 + \cdots + \alpha_n \cdot y_n = 0$ ayniy munosabat bajarilsa, [a,b] kesmada aniqlangan va uzluksiz

$y_1, y_2, \dots, y_n$ funksiyalar sistemasi … deyiladi.

1 5

chiziqli bog‘liq

chiziqli erkli

fundamental sistema

ortogonal

Agar $y_1, y_2, y_3, \dots, y_n$ funksiyalar sistemasi chiziqli bog‘liq bo‘lsa, bu sistemaning Vronskiy determinanti

$W(x)$ funksiya aniqlangan barcha nuqtalarida … bo‘ladi.

1 5

aynan nolga teng

noldan farqli

musbat aniqlangan

manfiy aniqlangan

Agar $y_1, y_2, y_3, \dots, y_n$ funksiyalar chiziqli erkli va chiziqli bir jinsli DT ning yechimlari bo‘lsa, u holda bu funksiyalarning Vronskiy determinanti tenglamaning koeffitsiyentlari aniqlangan sohaning …

1 5

hech bir nuqtasida nolga teng bo‘lmaydi.

biror nuqtasida noldan farqli bo‘ladi.

biror nuqtasida nolga teng bo‘ladi.

barcha nuqtasida nolga teng bo‘ladi.

Quyidagi $y'' + p(x)y' + q(x)y = 0$ tenglamaga … deyiladi

1 5

Ikkinchi tartibli chiziqli bir jinsli differensial tenglama

Ikkinchi tartibli o‘zgarmas koeffitsientli chiziqli bir jinsli bo‘lmagan differensial tenglama

Ikkinchi tartibli o‘zgarmas koeffitsientli differensial tenglama

Ikkinchi tartibli chiziqli bir jinsli bo‘lmagan differensial tenglama

Quyidagi $y'' + p(x)y' + q(x)y$ tenglamaga … deyiladi $(f(x) \neq 0)$

1 5

Ikkinchi tartibli chiziqli bir jinsli bo‘lmagan differensial tenglama

Ikkinchi tartibli o‘zgarmas koeffitsientli chiziqli bir jinsli bo‘lmagan differensial tenglama

Ikkinchi tartibli bir jinsli differensial tenglama

Ikkinchi tartibli chiziqli bir jinsli differensial tenglama

$F(y, y', y'') = 0$ tenglamaning tartibini pasaytirish uchun qanday almashtirish bajariladi?

1 5

$$y' = p,\ y'' = p\frac{dp}{dy}, \dots,$$

$p = y''$

$p = y' + y$

$p^k = y'$

Laplas almashtirishini aniqlang:

1 5

$F(\mathrm{p}) \doteq \int_0^\infty e^{-pt} f(\mathrm{t})dt$

$F(\mathrm{p}) \doteq \int_p^\infty e^{pt} f(\mathrm{t})dt$

$F(\mathrm{p}) \doteq \int_{-\infty}^\infty e^{-pt} f(\mathrm{t})dt$

$F(\mathrm{p}) \doteq \int_{-p}^\infty e^{-pt} f(\mathrm{t})dt$

O’xshashlik teoremasini aniqlang:

1 5

$f(\alpha\,\mathrm{t}) \leftarrow\!\div\!- \frac{1}{\alpha} F\left(\frac{p}{\alpha}\right)$

$f(\alpha\,\mathrm{t}) \leftarrow\!\div\!- -\frac{1}{\alpha} F(p)$

$f(\mathrm{t}) \leftarrow\!\div\!- \frac{1}{\alpha} F\left(\frac{p}{\alpha}\right)$

$f(\alpha\,\mathrm{t}) \leftarrow\!\div\!- F\left(\frac{p}{\alpha}\right)$

Tasvirning siljish teoremasini aniqlang:

1 5

$e^{\alpha t} f(\mathrm{t}) \leftarrow\!\div\!- F(p-\alpha)$

$e^{\alpha t} f(\mathrm{t}) \leftarrow\!\div\!- F(\mathrm{p}+\alpha)$

$e^{-\alpha t} f(\mathrm{t}) \leftarrow\!\div\!- F(p-\alpha)$

$e^{\alpha t} f(\mathrm{t}) \leftarrow\!\!\div\; -F(p-\alpha)$

Kechikish teoremasini aniqlang.

1 5

$f(t-t_0) \leftarrow\!\!\div\; e^{-pt_0} F(p)$

$f(\alpha\,\mathrm{t}) \leftarrow\!\!\div\; \frac{1}{\alpha} F\left(\frac{p}{\alpha}\right)$

$e^{\alpha t} f(\mathrm{t}) \leftarrow\!\!\div\; F(p-\alpha)$

$e^{\alpha t} f(t) \leftarrow\!\!\div\; F(p+\alpha)$

Quyidagi tenglamalardan qaysi birini tartibini pasaytirib bo`lmaydi?

1 5

$y'' - 2y' - 3y = xe^{4x}$

$xy'' = y' \ln \frac{y'}{x}$

$y'''(x-1) - y'' = 0$

$1 + y'^2 = y\,y''$

Quyidagilardan  qaysi biri o`ng tomoni maxsus ko`rinishda bo`lgan  differensial tenglama  emas?

1 5

$y'' + 4y = 4\sec 2x$

$y'' + 9y = 3ch3x$

$y'' + y = \frac{\sin x}{e^x}$

$y''' - y' = 2e^x + \sin x.$

Quyidagilardan  qaysi biri o`ng tomoni maxsus ko`rinishda bo`lgan  differensial tenglama  emas?

1 5

$y'' - 2y' + y = xe^{x^2}$

$y''' - y' = 2e^x + \cos x.$

$y'' + 2y' = 2\operatorname{sh} 2x.$

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

Quyidagilardan qaysi biri o`ng tomoni maxsus ko`rinishda bo`lgan differensial tenglama?

1 5

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

$y'' + 2y' + y = \dfrac{e^x}{x}$

$y'' + 2y = \sec x$

$y'' - 2y' + y = \dfrac{1}{xe^x}$

Quyidagilardan qaysi biri chiziqli bir jinsli bo‘lmagan differensial tenglamalar sistemasi?

1 5

$\begin{cases} x' = 2x + y \\ y' = 3x - 4e^t \end{cases}$

$\begin{cases} x' = 2x + y \\ y' = 3x \end{cases}$

$\begin{cases} x' = 2x + y \\ y' = 3x + 4y \end{cases}$

$\begin{cases} x' = y - 2x \\ y' = 3x \end{cases}$

Quyidagilardan qaysi biri chiziqli bir jinsli differensial tenglamalar sistemasi?

1 5

$$\begin{cases} x' = 2x + y \\ y' = 3x + 4y \end{cases}$$

$$\begin{cases} x' = -2x + y \\ y' = 3x - 6e^{-2t} \end{cases}$$

$$\begin{cases} x' = -y + 1 \\ y' = x - 2, \end{cases}$$

$$\begin{cases} x' = 2x + y \\ y' = 3x - 4e^{t} \end{cases}$$

Differensial tenglamaning umumiy yechimini toping

$$y'' - 10y' + 25y = 0$$

1 6

$$y = (C_1 + C_2 x)e^{5x}$$

$$y = (C_1 + C_2)e^{5x}$$

$$y = (C_1 x + C_2 x)e^{5x}$$

$$y = (C_1 + C_2 x)e^{5}$$

Differensial tenglamaning umumiy yechimini toping

$$y'' + y = 0$$

1 6

$$y = C_1 \cos x + C_2 \sin x$$

$$y = C_1 \cos y + C_2 \sin y$$

$$y = C \cos x + \sin x$$

$$y = Ce^{x}(\cos x + \sin x)$$

Differensial tenglamaning umumiy yechimini toping

$$y'' + 2y' = 0$$

1 6

$$y = C_1 + C_2 e^{-2x}$$

$$y = Ce^{-2x}$$

$$y = Ce^{2x}$$

$$y = C_1 + C_2 e^{2x}$$

Differensial tenglamaning umumiy yechimini toping

$$y'' - y' + y = 0$$

1 6

$$y = e^{\frac{x}{2}}(C_1 \cos\frac{\sqrt{3}}{2}x + C_2 \sin\frac{\sqrt{3}}{2}x)$$

$$y = C_1 \cos\frac{\sqrt{3}}{2}x + C_2 \sin\frac{\sqrt{3}}{2}x$$

$$y = e^{\frac{x}{2}}(C_1 \cos x + C_2 \sin x)$$

$$y = e^{\frac{3}{2}x}(C_1 \cos\frac{1}{2}x + C_2 \sin\frac{1}{2}x)$$

Differensial tenglamani yeching

$$y'' - 4y' + 8y = 0$$

1 6

$$y = e^{2x}(c_1 \cos 2x + c_2 \sin 2x)$$

$$y = c_1 e^{2x} \cdot c_2 e^{-2x}$$

$$y = e^{-2x}(c_1 \cos 2x + c_2 \sin 2x)$$

$$y = c_1 e^{-2x} \cdot c_2 e^{x}$$

Differensial tenglamani yeching

$$y''' - y'' - 9y' + 9y = 0$$

1 6

$$y = c_1 e^{x} + c_2 e^{3x} + c_3 e^{-3x}$$

$$y = c_1 e^{3x} + c_2 e^{-3x}$$

$$y = c_1 e^{x} + c_2 e^{3x} + c_3 e^{x}$$

$$y = c_1 e^{x} + c_2 e^{-3x} + c_3 e^{-3x}$$

Differensial tenglamani yeching

$$y'' - 4y + 4y = 0$$

1 6

$$y = e^{2x} c_1 + e^{2x} x c_2$$

$$y = e^x c_1 + e^x c_2$$

$$y = e^x c_1 + e^{-x} c_2$$

$$y = xe^x c_1 + e^x c_2$$

Differensial tenglamani yeching

$$y'' + 2y' = 0$$

1 6

$$y = c_1 + e^{-2x} c_2$$

$$y = e^x c_1 + e^{-x} c_2$$

$$y = e^x c_1 + e^{-2x} c_2$$

$$y = c_1 + e^{2x} c_2$$

Differensial tenglamani yeching

$$y'' + 2y' + 5y = 0$$

1 6

$$y = e^{-x}(c_1 \cos 2x + c_2 \sin 2x)$$

$$y = e^{-x}(c_1 \cos 2x + c_2 \cos 2x)$$

$$y = e^x(c_1 \cos 3x + c_2 \cos 3x)$$

$$y = e^{x}(c_1 \cos 2x + c_2 \sin 2x)$$

Differensial tenglamani yeching

$$y'' - 4y' + 8y = 0$$

1 6

$$y = e^{2x}(c_1 \cos 2x + c_2 \sin 2x)$$

$$y = e^{x}(c_1 \cos 2x + c_2 \sin 2x)$$

$$y = e^{-2x}(c_1 \cos 2x + c_2 \sin 2x)$$

$$y = e^{-x}(c_1 \cos 2x + c_2 \sin 2x)$$

Differensial tenglamani yeching

$$y'' + 6y' = 0$$

1 6

$$y = c_1 + e^{-6x}c_2$$

$$y = c_1 + e^{6x}c_2$$

$$y = xc_1 + e^{-6x}c_2$$

$$y = c_1 e^{-6x} + e^{-6x}c_2$$

Differensial tenglamani yeching

$$y''' - y'' - y' + y = 0$$

1 6

$$y = c_1 e^x + e^x c_2 x + c_3 e^{-x}$$

$$y = (c_1 + c_2 x)e^{-x} + c_3 e^{-x}$$

$$y = (c_1 + c_2 x)e^{x} + c_3 e^{2x}$$

$$y = (c_1 + c_2 x)e^{-x} + c_3 e^{2x}$$

Differensial tenglamani yeching

$$y'' + 4y = 0$$

1 6

$$y = c_1 \cos 2x + c_2 \sin 2x$$

$$y = e^x (\cos 2x + \sin 2x)$$

$$y = e^x (c_1 \cos 2x + c_2 \sin 2x)$$

$$y = e^{-x} (c_1 \cos 2x + c_2 \sin 2x)$$

Differensial tenglamani yeching

$$y'' + 6y' + 9y = 0$$

1 6

$$y=(c_1+c_2x)e^{-3x}$$

$$y=(c_1+c_2)e^{-3x}$$

$$y=c_1e^{x}+e^{-3x}c_2$$

$$y=(c_1+c_2x^2)e^{-3x}$$

$y(0)=0$ va $y'(0)=-6$ boshlang’ich shartlar bilan berilgan

$y''-2y'-8y=0$ differensial tenglamani yeching.

1 6

$$y=e^{-2x}-e^{4x}$$

$$y=e^{x}-2e^{2x}$$

$$y=2e^{x}-2e^{2x}$$

$$y=e^{-x}-e^{2x}$$

Umumiy yechim ko`rinishi orqali differensial tenglamani aniqlang:

$$y=c_1e^{-x}+c_2e^{-2x}$$

1 6

$$y''+3y'+2y=0$$

$$y''-3y'+2y=0$$

$y'' + 3y' - 2y = 0$

$y'' + 3y' + 5y = 0$

Umumiy yechim ko`rinishi orqali differensial tenglamani aniqlang:

$y = c_1 e^{-2x} + c_2 e^{4x}$

1 6

$y'' - 2y' - 8y = 0$

$y'' - 5y' + 8y = 0$

$y'' + 7y' - 8y = 0$

$y'' + 8y' + 5y = 0$

Fundamental yechimlari $y_1 = e^{x}, \quad y_2 = e^{2x}$

bo`lgan differensial tenglamaning ko`rinishini aniqlang

1 6

$y'' - 3y' + 2y = 0$

$y'' - 3y' - 2y = 0$

$y'' + 3y' - 2y = 0$

$y'' + 3y' + 5y = 0$

Fundamental yechimlari $y_1 = e^{2x}, \quad y_2 = e^{5x}$

bo`lgan  differensial tenglamaning ko`rinishini aniqlang

1 6

$$y'' - 7y' + 10y = 0$$

$$y'' - 6y' - 10y = 0$$

$$y'' + 3y' - 10y = 0$$

$$y'' + 7y' + 10y = 0$$

Fundamental yechimlari $y_1 = e^{x}, \quad y_2 = e^{4x}$

bo`lgan  differensial tenglamaning ko`rinishini aniqlang

1 6

$$y'' - 5y' + 4y = 0$$

$$y'' - 4y' - 5y = 0$$

$$y'' + 4y' - 5y = 0$$

$$y'' + 5y' + 4y = 0$$

Chiziqli differensial tenglamani yeching:

$$y' - \frac{4y}{x} = x$$

2 7

$$y = Cx^4 - \frac{1}{2}x^2$$

$$y = Cx^4 + x^2$$

$$y = Cx^4 + \frac{1}{2}x^2$$

$$y = x^3 + Cx^2$$

Chiziqli differensial tenglamani yeching:

$$y' + \frac{2y}{x} = 4x$$

2 7

$$y = \frac{C}{x^2} + x^2$$

$$y = \frac{C}{x^2} + \frac{x^2}{2}$$

$$y = Cx^4 + \frac{1}{2}x^2$$

$$y = x^3 + Cx^2$$

Chiziqli differensial tenglamani yeching:

$$y' + \frac{2y}{x} = 2x$$

2 7

$$y = \frac{C}{x^2} + \frac{x^2}{2}$$

$$y = \frac{C}{x^2} + x^2$$

$$y = Cx^4 - \frac{1}{2}x^2$$

$$y = Cx^4 - \frac{1}{2}x^2$$

Chiziqli differensial tenglamani yeching:

$$y' - \frac{4y}{x} = -2x$$

2 7

$$y = Cx^4 + x^2$$

$$y = Cx^4 - \frac{1}{2}x^2$$

$$y = Cx^4 + \frac{1}{2}x^2$$

$$y = x^3 + Cx^2$$

Chiziqli differensial tenglamani yeching:

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

2 7

$$y = \frac{Ce^x - 1}{xe^x}$$

$$y = \frac{Ce^x + 1}{xe^x}$$

$$y = \frac{Ce^x - 1}{e^x}$$

$$y = \frac{C + e^{-x}}{x^2}$$

Chiziqli differensial tenglamani yeching:

$$y' + 3y = e^x$$

2 7

$$y = \frac{C + e^{4x}}{4e^{3x}}$$

$$y = \frac{C + e^{4x}}{e^{3x}}$$

$$y = \frac{C + e^{3x}}{4e^{4x}}$$

$$y = \frac{C - e^{4x}}{4e^{3x}}$$

Chiziqli differensial tenglamani yeching:

$$y' = 4x + y$$

2 7

$$y = Ce^{x} - 4x - 4$$

$$y = e^{x} + x^{2} + C$$

$$y = e^{x} + C\left(x^{2} + x\right)$$

$$y = e^{x} + x + C$$

Chiziqli differensial tenglamani yeching:

$$y' - 2xy = e^{x^{2}}$$

2 7

$$y = \left(C + x\right)e^{x^{2}}$$

$$y = \left(C + x\right)e^{x}$$

$$y = \left(Cx + 1\right)e^{x^{2}}$$

$$y = C + xe^{x^{2}}$$

Chiziqli differensial tenglamani yeching:

$$y' + 2xy = e^{-x^{2}}$$

2 7

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

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

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

$$y=C+xe^{-x^2}$$

Chiziqli differensial tenglamani yeching:

$$y'-\frac{y}{x}=\ln x$$

2 7

$$y=x\left(C+\frac{1}{2}\ln^2 x\right)$$

$$y=x\left(C+\frac{1}{2}\ln x\right)$$

$$y=\ln x\left(C+x^2\right)$$

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

Differensial tenglamani yeching:

$$y'+\frac{y}{x}=\frac{\sin x}{x}$$

2 7

$$y=\frac{1}{x}(C-cosx)$$

$$y=\ln x\left(C+x^2\right)$$

$$y=x(C-cosx)$$

$$y = \frac{1}{x}\left(C + cosx\right)$$

Differensial tenglamani yeching:

$$y' + \frac{y}{x} = \frac{cosx}{x}$$

2 7

$$y = \frac{1}{x}\left(C + \sin x\right)$$

$$y = x\left(C + \sin x\right)$$

$$y = x\left(C - \sin x\right)$$

$$y = \frac{1}{x}\left(C - \sin x\right)$$

Differensial tenglamani yeching:

$$y' - \frac{y}{x} = x \sin x$$

2 7

$$y = x\left(C - cosx\right)$$

$$y = x\left(C + cosx\right)$$

$$y = \frac{1}{x}\left(C - cosx\right)$$

$$y = \frac{1}{x}\left(C + cosx\right)$$

Differensial tenglamani yeching:

$$y' - \frac{y}{x} = x \cos x$$

2 7

$y = x\left(C + \sin x\right)$

$y = x\left(C - \sin x\right)$

$y = \frac{1}{x}\left(C - \sin x\right)$

$y = \frac{1}{x}\left(C + \sin x\right)$

Differensial tenglamani yeching:

$y' + \frac{2y}{x} = 3e^{-x^3}$

2 7

$y = x^{-2}\left(C - e^{-x^3}\right)$

$y = x^{-2}\left(C + e^{-x^3}\right)$

$y = x^{2}\left(C - e^{-x^3}\right)$

$y = x^{2}\left(C + e^{-x^3}\right)$

Differensial tenglamani yeching:

$y' + \frac{2y}{x} = -3e^{-x^3}$

2 7

$y = x^{-2}\left(C + e^{-x^3}\right)$

$y = x^{-2}\left(C - e^{-x^3}\right)$

$$y = x^2\left(C - e^{-x^3}\right)$$

$$y = x^2\left(C + e^{-x^3}\right)$$

Differensial tenglamani yeching:

$$y' - \frac{2y}{x} = 3x^4 e^{x^3}$$

2 7

$$y = x^2\left(C + e^{x^3}\right)$$

$$y = x^2\left(C - e^{x^3}\right)$$

$$y = x^{-2}\left(C + e^{x^3}\right)$$

$$y = x^{-2}\left(C - e^{x^3}\right)$$

Differensial tenglamani yeching:

$$y' - \frac{2y}{x} = -3x^4 e^{-x^3}$$

2 7

$$y = x^2\left(C + e^{-x^3}\right)$$

$$y = x^2\left(C - e^{-x^3}\right)$$

$$y = x^{-2}\left(C + e^{-x^3}\right)$$

$$y = x^{-2}\left(C - e^{-x^3}\right)$$

Differensial tenglamani yeching:

$$y' + \frac{3y}{x} = \frac{3}{x}$$

2 7

$$y = 1 + \frac{C}{x^3}$$

$$y = x - \frac{C}{x^3}$$

$$y = \frac{C + x}{x^3}$$

$$y = \frac{C - x}{x^3}$$

Differensial tenglamani yeching:

$$y' = 1 - 2x + y$$

2 7

$$y = Ce^x + 2x + 1$$

$$y = e^x + x^2 + C$$

$$y = e^x + C\left(x^2 + x\right)$$

$$y = Ce^x - 2x - 2$$

Tenglamani yeching

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

2 8

$$y = x\ln\left(\ln(Cx)\right)$$

$$y = \ln\left(\ln(Cx^2)\right)$$

$$y = \ln\left(\ln(Cx)\right)$$

$$y = x + \ln\left(\ln(Cx)\right)$$

Tenglamani yeching

$$y' = e^{\frac{y}{x}} + \frac{y}{x}$$

2 8

$$y = -x\ln\left(\ln\left(\frac{C}{x}\right)\right)$$

$$y = x\ln\left(\ln\left(\frac{C}{x}\right)\right)$$

$$y = \ln\left(\ln\left(\frac{C}{x}\right)\right)$$

$$y = x + \ln\left(\ln\left(\frac{C}{x}\right)\right)$$

Tenglamani yeching

$$x^2 y' = -y^2 + xy$$

2 8

$$y = \frac{x}{\ln x + C}$$

$$y = \frac{\ln x + C}{x}$$

$$y = x(\ln x + C)$$

$$y = x\ln x + C$$

Tenglamani yeching

$$y' = \frac{xy}{x^2 - y^2}$$

2 8

$$2y^2 \ln(Cy) = -x^2$$

$$y^2 = -2x^2 \ln(Cx)$$

$$2y \ln(Cy) = -x^2$$

$$2y^2 \ln(Cy) = -x$$

Tenglamani yeching

$$y' = \frac{y - x}{x}$$

2 8

$$2y^2 \ln(Cy) = -x^2$$

$$x = y \ln\left(\frac{C}{x}\right)$$

$$y = x \ln\left(\frac{C}{y}\right)$$

$$y = x \ln\left(\frac{y}{C}\right)$$

Tenglamani yeching

$$y'x - y = x \sin\frac{y}{x}$$

2 8

$$y = 2xarctg\left(Cx\right)$$

$y = xarctg\left(Cx\right)$

$y = xarctg\left(Cx^2\right)$

$y = 2xarctg\left(C + x\right)$

Tenglamani yeching

$x^2 y' = y^2$

2 8

$y = \dfrac{x}{1 - Cx}$

$y = \dfrac{x}{1 + Cx^2}$

$y = \dfrac{x}{1 - Cx^2}$

$y = \dfrac{x^2}{1 - Cx}$

Tenglamani yeching

$xy' = 2xtg\dfrac{y}{x} + y$

2 8

$y = x\arcsin\left(Cx^2\right)$

$y = \arcsin\left(Cx\right)$

$y = x + \arcsin\left(Cx\right)$

$y = x^2\arcsin\left(Cx\right)$

Tenglamani yeching

$x^2y' = x^2 + y^2 + xy$

2 9

$y = xtg\left(C + \ln x\right)$

$y = xctg\left(C + \ln x\right)$

$y = xtg\left(C - \ln x\right)$

$y = xctg\left(C - \ln x\right)$

Tenglamani yeching

$x^2y' = -x^2 + 2xy$

2 8

$y = x(1 + Cx)$

$y = x(1 + Cx^2)$

$y = x^2(1 + Cx)$

$y = x(C + x)$

Tenglamani yeching

$y^2y' = x^2$

2 8

$y = \sqrt[3]{x^3 + C}$

$y = \sqrt[3]{x^2 + C}$

$y = x\sqrt[3]{x^3 - C}$

$y = x\sqrt[3]{x^2 - C}$

Tenglamani yeching

$x^2y' = -3x^2 + 2xy$

2 8

$$y = 3x + Cx^2$$

$$y = -3x + Cx^2$$

$$y = x + Cx^2$$

$$y = -x + Cx^2$$

Tenglamani yeching

$$x^2 y' = y^2 + xy$$

2 8

$$y = \frac{x}{\ln\left(\frac{C}{x}\right)}$$

$$y = \frac{2x}{\ln\left(\frac{C}{x}\right)}$$

$$y = \frac{x}{\ln\left(\frac{C}{y}\right)}$$

$$y = -\frac{x}{\ln\left(\frac{C}{y}\right)}$$

Tenglamani yeching

$$y' = \frac{x^2 + y^2}{xy}$$

2 8

$$y^2 = x^2\left(2\ln x + C\right)$$

$$y = x^2\left(2\ln x + C\right)$$

$$y^2 = x^2\left(-2\ln x + C\right)$$

$$y = x\left(2\ln x + C\right)$$

Tenglamani yeching

$$y' = \frac{y}{x+y}$$

2 8

$$x = y\ln\left(Cy\right)$$

$$y = x\ln\left(Cx\right)$$

$$y = x\ln\left(Cy\right)$$

$$\ln y + \frac{y}{x} = C$$

Tenglamani yeching

$$xy' - y = xtg\,\frac{y}{x}$$

2 8

$$y = x\cdot\arcsin\left(Cx\right)$$

$$y = x\arcsin\left(Cx^2\right)$$

$$y = x + \arcsin\left(Cx\right)$$

$$y = x^2\arcsin\left(Cx\right)$$

Tenglamani yeching

$$x^2y' = -5x^2 + 2xy$$

2 8

$$y = 5x + Cx^2$$

$y = -5x + Cx^2$

$y = x + Cx^2$

$y = -x + Cx^2$

Tenglamani yeching

$x^2 y' = 5x^2 + 2xy$

2 8

$y = -5x + Cx^2$

$y = 5x + Cx^2$

$y = x + Cx^2$

$y = -x + Cx^2$

Tenglamani yeching

$y' = \dfrac{xy}{x^2 - y^2}$

2 8

$x^2 = -2y^2 \ln(Cy)$

$x^2 = 2y^2 \ln(Cy)$

$x^2 = 2y^2 \ln(Cx)$

$x = 2y \ln(Cy)$

Tenglamani yeching

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

2 8

$\ln y + \frac{x}{y} = C$

$\ln y - \frac{x}{y} = C$

$\ln|x| + \frac{x}{y} = C$

$2\ln y + \frac{y}{x} = C$

$y'' - 2y' - 3y = 4e^{3x} + x$

tenglama uchun xususiy yechim qanday ko`rinishda qidiriladi?

2 9

$y_* = Axe^{3x} + Bx + C$

$y_* = Ae^{3x} + Bx + C$

$y_* = Axe^{3x} + Bx$

$y_* = 4Ae^{3x} + Bx + C$

$y'' + y = xe^{x} + 2e^{-x}$

tenglama uchun xususiy yechim qanday ko`rinishda qidiriladi?

2 9

$y_* = (Ax + B)e^{x} + Ce^{-x}$

$(Ax + B)e^{x}$

$y_* = Axe^{x} + Ce^{-x}$

$y_* = Ae^{x} + Ce^{-x}$

$y'' - 2y' + 2y = e^x + 2\cos x$

tenglama uchun xususiy yechim qanday ko`rinishda qidiriladi?

2 9

$y_* = Ae^x + B\cos x + C\sin x$

$y_* = Axe^x + B\cos x + C\sin x$

$y_* = Axe^x + B\cos x$

$y_* = Axe^x + Bx\cos x +$
$+Cx\sin x$

$y'' - 2y' + 2y = e^x \cos x$

tenglama uchun xususiy yechim qanday ko`rinishda qidiriladi?

2 9

$y_* = e^x\left(Ax\cos x + Bx\sin x\right)$

$y_* = e^x\left(A\cos x + B\sin x\right)$

$y_* = Axe^x \cos x$

$y_* = \left(Ax + B\right)e^x \cos x$

$y'' + y = 4\sin x$

tenglama uchun xususiy yechim qanday ko`rinishda qidiriladi?

2 9

$y_* = x\left(A\cos x + B\sin x\right)$

$y_* = A\sin x$

$y_* = A\cos x + B\sin x$

$y_* = Ax\sin x$

$y'' - y' = \mathrm{ch}\, 2x$

tenglama uchun xususiy yechim qanday ko`rinishda qidiriladi?

2 9

$y_* = Ae^{2x} + Be^{-2x}$

$y_* = Axe^{2x} + Be^{-2x}$

$y_* = Ae^{2x} + Bxe^{-2x}$

$y_* = Axe^{2x} + Bxe^{-2x}$

$y'' - 2y' = \mathrm{ch}\, 2x$

tenglama uchun xususiy yechim qanday ko`rinishda qidiriladi?

2 9

$y_* = Axe^{2x} + Be^{-2x}$

$y_* = Ae^{2x} + Be^{-2x}$

$y_* = Ae^{2x} + Bxe^{-2x}$

$y_* = Axe^{x} + Be^{-2x}$

$y'' + 2y' = \mathrm{ch}\, 2x$

tenglama uchun xususiy yechim qanday ko`rinishda qidiriladi?

2 9

$y_* = Ae^{2x} + Bxe^{-2x}$

$y_* = Axe^{2x} + Be^{-2x}$

$y_* = Ae^{2x} + Be^{-2x}$

$y_* = Axe^{x} + Be^{-2x}$

$y'' - 4y = \text{ch}\, 2x$

tenglama uchun xususiy yechim qanday ko`rinishda qidiriladi?

2 9

$y_* = Axe^{2x} + Bxe^{-2x}$

$y_* = Axe^{2x} + Be^{-2x}$

$y_* = Ae^{2x} + Be^{-2x}$

$y_* = Ae^{2x} + Bxe^{-2x}$

$y'' + 4y = \text{ch}\, 2x$

tenglama uchun xususiy yechim qanday ko`rinishda qidiriladi?

2 9

$y_* = Ae^{2x} + Be^{-2x}$

$y_* = A\cos x + B\sin x$

$y_* = Axe^{2x} + Bxe^{-2x}$

$y_* = A\cos x$

Qaysi tenglamaning xususiy yechimi quyidagi ko‘rinishda qidiriladi?

$y_* = \left(Ax + B\right)e^{x} + Ce^{-x}$

2 9

$y'' + y = xe^{x} + 2e^{-x}$

$y'' + y = 3e^{x} + xe^{-x}$

$y'' + 4y = \mathrm{ch}\, x$

$y'' - y = xe^{x} + 3e^{-x}$

Qaysi tenglamaning xususiy yechimi quyidagi ko‘rinishda qidiriladi?

$y_* = Ae^{2x} + Bxe^{-2x}$

2 9

$y'' + 2y' = sh2x$

$y'' + 4y = \mathrm{ch}\, x$

$y'' + y = 3e^{2x} + xe^{-2x}$

$y'' + y = xe^{x} + 2e^{-x}$

Qaysi tenglamaning xususiy yechimi quyidagi ko‘rinishda qidiriladi?

$y_* = e^{x}\left(Ax\cos x + Bx\sin x\right)$

2 9

$y'' - 2y' + 2y = e^{x}\cos x$

$y'' + 4y = 5\sin x$

$y'' + 4y = e^{x}\sin x$

$y'' + y = 4\sin x$

Qaysi tenglamaning xususiy yechimi quyidagi ko‘rinishda qidiriladi?

$y_* = Axe^{2x} + Be^{-2x}$

2 9

$y'' - 2y' = sh2x$

$y'' + y = xe^{2x} + 2e^{-2x}$

$y'' + y = 3e^{2x} + xe^{-2x}$

$y'' + 2y' = sh2x$

Qaysi tenglamaning xususiy yechimi quyidagi ko‘rinishda qidiriladi?

$y_* = Axe^{2x} + Bxe^{-2x}$

2 9

$y'' - 4y = \mathrm{ch}\,2x$

$y'' - 2y' = sh2x$

$y'' - 2y' = 3e^{2x} + xe^{-2x}$

$y'' + y = xe^{2x} + 2e^{-2x}$

Qaysi tenglamaning xususiy yechimi quyidagi ko‘rinishda qidiriladi?

$y_* = \left(Ax^3 + Bx^2\right)e^{2x}$

2 9

$y'' - 4y' + 4y = 6xe^{2x}$

$y'' - 4y = \mathrm{ch}\,2x$

$y'' - 2y' = xe^{2x}$

$y'' - 4y = x^2e^{2x}$

Qaysi tenglamaning xususiy yechimi quyidagi ko‘rinishda qidiriladi?

$y_* = (Ax + B)e^x + Cxe^{4x}$

2 9

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

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

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

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

Qaysi tenglamaning xususiy yechimi quyidagi ko'rinishda qidiriladi?

$y_* = (Ax^2 + Bx)e^x + Ce^{4x}$

2 9

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

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

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

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

Qaysi tenglamaning xususiy yechimi quyidagi ko'rinishda qidiriladi?

$y_* = Ae^x + (Bx^2 + Cx)e^{4x}$

2 9

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

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

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

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

Qaysi tenglamaning xususiy yechimi  quyidagi ko‘rinishda qidiriladi?

$y_* = Axe^{-x} + \left(Bx^2 + Cx\right)e^{4x}$

2 9

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

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

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

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

Koshi masalasini  yechimini toping

$y'' = 4e^{-2x} + 6x \quad y(0) = 1, \; y'(0) = 0$

2 10

$y = e^{-2x} + x^3 + 2x$

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

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

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

Koshi masalasini  yechimini toping

$y'' = xe^{-x} \quad y(0) = 1, \; y'(0) = 0$

2 10

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

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

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

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

Koshi masalasini yechimini toping

$y''=8\cos^2 x \quad y(0)=-1,\ y'(0)=1$

2 10

$y=2x^2-\cos 2x+x$

$y=1-2\cos 2x+x$

$y=x-\cos 2x$

$y=2x^3-\cos 2x+x$

Koshi masalasini yechimini toping

$y''=e^{2x} \quad y(0)=1,\ y'(0)=0$

2 10

$y=\frac{1}{4}e^{2x}-\frac{1}{2}x+\frac{3}{4}$

$y=\frac{1}{4}e^{2x}+\frac{1}{2}x+\frac{3}{4}$

$y=\frac{1}{4}e^{2x}-\frac{1}{2}x+1$

$y=\frac{1}{2}e^{2x}-x+\frac{1}{2}$

Koshi masalasini yechimini toping

$y''=\sin 2x \quad y(0)=1,\ y'(0)=-1$

2 10

$y=-\frac{1}{4}\sin 2x-\frac{1}{2}x+1$

$$y = \frac{1}{4}\sin 2x + 1$$

$$y = -\frac{1}{4}\sin 2x + \frac{1}{2}x + 1$$

$$y = \frac{1}{4}\sin 2x - x + 1$$

Koshi masalasini  yechimini toping

$$y'' = e^{-x} + 2x \quad y(0) = 1,\ y'(0) = 0$$

2 10

$$y = e^{-x} + \frac{x^3}{3} + x$$

$$y = e^{-x} + \frac{x^3}{6} + x$$

$$y = e^{-x} + \frac{x^3}{6} + x + 1$$

$$y = e^{-x} + \frac{x^3}{2} + 2x$$

$$y''' = 24x$$

tenglamaning umumiy yechimini toping.

2 10

$$y = x^4 + C_1x^2 + C_2x + C_3$$

$$y = x^2 + x + 1$$

$$y = x^3 + C_1x + C_2$$

$$y = x^2 + C_1x + C_2$$

$$\left(1 + x^2\right)y'' - 2xy' = 2x$$

tenglamaning umumiy yechimini toping.

2 10

$$y = C_1\left(x + \frac{x^3}{3}\right) - x + C_2$$

$$y = C_1\left(x + \frac{x^3}{3}\right) + C_2$$

$$y = C\left(x + \frac{x^3}{3}\right) - x$$

$$y = C\left(x + \frac{x^3}{3}\right) + x$$

$$y''(x-1) - y' = 0$$

tenglamaning umumiy yechimini toping.

2 10

$$y = C_1x^2 - 2C_1x + C_2$$

$$y = C_1\frac{x^2}{2} - C_2x$$

$$y = C_1x^2 + C_2$$

$$y = C_1\frac{x^2}{2} - x + C_2$$

$$y''' = \cos x$$

tenglamaning umumiy yechimini toping.

2 10

$$y = -\sin x + C_1x^2 + C_2x + C$$

$$y = -\sin x + Cx$$

$$y = \sin x + \frac{C_1x^2}{2} + C_2x + C_3$$

$$y = -\sin x + \frac{Cx^2}{2}$$

$$y'' = xe^{-x}$$

tenglamaning umumiy yechimini toping.

2 10

$y=(x+2)e^{-x}+C_1x+C_2$

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

$y=e^{-x}+Cx-C_1$

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

$(1+x)y''-y'=1$

tenglamaning umumiy yechimini toping.

2 10

$y=C_1\left(x+\frac{x^2}{2}\right)-x+C_2$

$y=C_1\left(x+\frac{x^2}{2}\right)+C_2$

$y=C\left(x+\frac{x^2}{2}\right)-x$

$y=C_1\left(x+\frac{x^2}{2}\right)+C_2x$

$y''(x+1)-y'=0$

tenglamaning umumiy yechimini toping.

2 10

$y=C_1x^2+2C_1x+C_2$

$y=C_1\frac{x^2}{2}-C_2x$

$y=C_1x^2+C_2$

$y = C_1 \frac{x^2}{2} - x + C_2$

$\left(e^x + 2\right) y'' - e^x y' = 0$

tenglamaning umumiy yechimini toping.

2 10

$y = C_1(e^x + 2x) + C_2$

$y = C_1(e^x - 2x) + C_2$

$y = C_1 e^x + 2C_2 x$

$y = C_1(e^x - 2x) + C_2 x$

$\left(e^x + 3\right) y'' - e^x y' = 0$;

tenglamaning umumiy yechimini toping.

2 10

$y = C_1(e^x + 3x) + C_2$

$y = C_1(e^x - 3x) + C_2$

$y = C_1 e^x + 3x + C_2$

$y = C_1(e^x - 3x) + C_2 x$

$(1 + x) y'' - y' = 2$

tenglamaning umumiy yechimini toping.

2 10

$y = C_1\left(x + \frac{x^2}{2}\right) - 2x + C_2$

$y = C_1\left(x + \frac{x^2}{2}\right) + C_2$

$$y = C\left(x + \frac{x^2}{2}\right) + 2x$$

$$y = C_1\left(x + \frac{x^2}{2}\right) + C_2 x$$

$$\left(e^x - 2\right)y'' - e^x y' = 0$$

tenglamaning umumiy yechimini toping.

2 10

$$y = C_1(e^x - 2x) + C_2$$

$$y = C_1(e^x + 2x) + C_2$$

$$y = C_1 e^x + 2C_2 x$$

$$y = C_1(e^x - 2x) + C_2 x$$

$$\left(e^x + 1\right)y'' = e^x y'$$

tenglamaning umumiy yechimini toping.

2 10

$$y = C_1(e^x + x) + C_2$$

$$y = C_1 e^x + C_2 x$$

$$y = C_1 e^x + x + C_2$$

$$y = C_1\left(e^x + 1\right) + C_2 x$$

$$\left(1 - 2x\right)y'' + 2y' = 2$$

tenglamaning umumiy yechimini toping.

2 10

$$y = C_1\left(x^2 - x\right) + x + C_2$$

$$y = C_1\left(x^2 - x\right) + 2x + C_2$$

$y = C_1\left(x^2 + x\right) - x + C_2$

$y = C\left(x^2 - x\right) + 2x$

$(2x+1)y'' - 2y' = 2$

tenglamaning umumiy yechimini toping.

2 10

$y = C_1\left(x^2 + x\right) - x + C_2$

$y = C_1\left(x^2 + x\right) + 2x + C_2$

$y = C_1\left(x^2 - x\right) + x + C_2$

$y = C\left(x^2 + x\right) - 2x$

Differensial tenglamaning umumiy integralini toping.

$\left(2xy^2 + e^x\right)dx + \left(2x^2y - \cos x\right)dy = 0$

2 11

$x^2y^2 + e^{x.} - \sin x = C$

$2x^2y^2 + e^{x.} + \sin x = C$

$2x^2y^2 + e^{x.} - \sin x = C$

$x^2y^2 + e^{x.} + \sin x = C$

Differensial tenglamaning umumiy integralini toping.

$2x\left(y^2 + 1\right)dx + y\left(2x^2 - 3y\right)dy = 0$

2 11

$x^2y^2 + x^{2.} - y^3 = C$

$2x^2y^2 + x^{2.} - y^3 = C$

$x^2y^2 - x^2 + y^3 = C$

$2x^2y^2 + x^2 + y^3 = C$

Differensial tenglamaning umumiy integralini toping.

$(2xy + 3y^2)dx + (x^2 + 6xy)dy = 0$

2 11

$x^2y + 3xy^2 = C$

$x^2y + 6xy = C$

$3xy^2 + x^3y = C$

$x^3y + 3xy^2 = C$

Differensial tenglamaning umumiy integralini toping.

$(x + \sin y)dx + (x\cos y + \sin y)dy = 0.$

2 11

$\frac{x^2}{2} + x\sin y - \cos y = C$

$\frac{x^2}{2} + 2x\sin y - \cos y = C$

$\frac{x^2}{2} + x\sin y + \cos y = C$

$\frac{x^2}{2} + 2x\sin y + \cos y = C$

Differensial tenglamaning umumiy integralini toping.

$e^y dx + (xe^y - 2y)dy = 0.$

2 11

$xe^y - y^2 = \mathrm{C}$

$2xe^{y}-y^{2}=C$

$xe^{y}+y^{2}=C$

$2xe^{y}+y^{2}=C$

Differensial tenglamaning umumiy integralini toping.

$(x^3+\cos y)dy-\left(2-3x^2y\right)dx=0$

2 11

$x^3y+\sin y-2x=C$

$2x^3y+x\cos y-2x=C$

$x^3y-\sin y+2x=C$

$x^3y+x\cos y-x=C$

Differensial tenglamaning umumiy integralini toping.

$\left(\frac{1}{x^2}-y\right)dx+(y-x)dy=0$

2 11

$-\frac{1}{x}-xy+\frac{y^2}{2}=C$

$-\frac{1}{x}-2xy+\frac{y^2}{2}=C$

$\frac{1}{x}-xy+\frac{y^2}{2}=C$

$-\frac{1}{x}+2xy+\frac{y^2}{2}=C$

Differensial tenglamaning umumiy integralini toping.

$\left(e^{y}+2xy\right)dx+\left(e^{y}+x\right)xdy=0$

2 11

$xe^y + x^2y = C$

$2xe^y + x^2y = C$

$xe^y + 2x^2y = C$

$2xe^y - x^2y = C$

Differensial tenglamaning umumiy integralini toping.

$(x^3 + xy^2)dx + x^2ydy = 0$

2 11

$\frac{x^4}{4} + \frac{x^2y^2}{2} = C$

$\frac{x^4}{2} + \frac{x^2y^2}{2} = C$

$\frac{x^4}{4} + x^2y^2 = C$

$x^4 + x^2y^2 = C$

Differensial tenglamaning umumiy integralini toping.

$(2x + \sin y)dx + (x\cos y + e^y)dy = 0$

2 11

$x^2 + x\sin y + e^y = C$

$x^2 + 2x\sin y - e^y = C$

$x^2 + x\sin y - e^y = C$

$x^2 + 2x\sin y + e^y = C$

Differensial tenglamaning umumiy integralini toping.

$(2x+\sin y)\,dx+(x\cos y+tgy)\,dy=0$

2 11

$x^2+x\sin y-\ln|\cos x|=C$

$x^2+x\sin y+\ln|\cos x|=C$

$x^2+x\sin y-\ln|\sin x|=C$

$x^2+2x\sin y-\ln|\cos x|=C$

Differensial tenglamaning umumiy integralini toping.

$2x(5y^2+3x)dx+(10x^2-3y)ydy=0$

2 11

$5x^2y^2+2x^3-y^3=C$

$10x^2y^2+2x^3-y^3=C$

$5x^2y^2+3x^3-y^3=C$

$10x^2y^2+x^3-y^3=C$

Differensial tenglamaning umumiy integralini toping.

$(y^3+\cos x)dx+3xy^2dy=0$

2 11

$xy^3+\sin x=C$

$2xy^3-\sin x=C$

$2xy^3+y\sin x=C$

$xy^3+y\sin x=C$

Differensial tenglamaning umumiy integralini toping.

$\left(2xy+\sin y-e^{-x}\right)dx+\left(x^2+x\cos y\right)dy=0$

2 11

$x^2y+x\sin y+e^{-x}=C$

$2x^2y+2x\cos y+e^{-x}=C$

$x^2y+x\cos y-e^{-x}=C$

$2x^2y+2x\sin y+e^{-x}=C$

Differensial tenglamaning umumiy integralini toping.

$\left(3x^2+2x-y\right)dx+\left(2y-x+3y^2\right)dy=0$

2 11

$x^3+y^3+x^2+y^2-xy=C$

$x^3+y^3+x^2+y^2-2xy=C$

$x^3-y^3+x^2-2xy=C$

$x^3+yx^2-2xy=C$

Differensial tenglamaning umumiy integralini toping.

$\left(e^y-chx\right)dx+\left(xe^y-2y\right)dy=0$

2 11

$xe^y-shx-y^2=C$

$xe^y+shx-y^2=C$

$xe^y-2shx-y^2=C$

$xe^y+2shx-y^2=C$

Differensial tenglamaning umumiy integralini toping.

$$\left(2x+ye^{xy}\right)dx-\left(2-xe^{xy}\right)dy=0$$

2 11

$x^2+e^{xy}-2y=C$

$x^2-e^{xy}+2y=C$

$x^2+2e^{xy}-2y=C$

$x^2-2e^{xy}+2y=C$

Differensial tenglamaning umumiy integralini toping.

$$\left(2x-ye^{xy}\right)dx-\left(xe^{xy}-2\right)dy=0$$

2 11

$x^2-e^{xy}+2y=C$

$x^2+e^{xy}-2y=C$

$x^2+2e^{xy}-2y=C$

$x^2-2e^{xy}+2y=C$

Differensial tenglamaning umumiy integralini toping.

$$\left(2xy+y\sec^2 x+1\right)dx+\left(x^2+tgx\right)dy=0$$

2 11

$x^2y+ytgx+x=C$

$2x^2y+2ytgx+x=C$

$x^2y-2ytgx+x=C$

$2x^2y-ytgx+x=C$

Differensial tenglamaning umumiy integralini toping.

$$\left(y+e^{x}\sin y\right)dx+\left(x+e^{x}\cos y-1\right)dy=0$$

2 11

$$xy+e^{x}\sin y-y=C$$

$$2xy+2e^{x}\sin y-y=C$$

$$xy+2e^{x}\sin y-y=C$$

$$xy+2e^{x}\sin y+y=C$$

Ushbu $y''+py'+qy=f(x)$ differensial tenglamani o‘zgarmasni variatsiyalash usulida yechishda $C_1(x)$ va $C_2(x)$ funksiyalarni aniqlovchi tenglamalar sistemasini tuzing.

2 12

$$\begin{cases}C_1'y_1+C_2'y_2=0\\C_1'y_1'+C_2'y_2'=f(x)\end{cases}$$

$$\begin{cases}C_1y_1+C_2y_2=0\\C_1y_1'+C_2y_2'=f(x)\end{cases}$$

$$\begin{cases}C_1y_1'+C_2y_2'=0\\C_1y_1'+C_2y_2'=f(x)\end{cases}$$

$$\begin{cases}C_1'y_1+C_2'y_2=0\\C_1y_1'+C_2y_2'=f(x)\end{cases}$$

$$y''+4y=2tgx$$

differensial tenglamani o‘zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani aniqlang.

2 12

$$\begin{cases}C_1'(x)\cos 2x+C_2'(x)\sin 2x=0\\-C_1'(x)\sin 2x+C_2'(x)\cos 2x=tgx\end{cases}$$

$$\begin{cases} C_1'(x)e^{2x} + C_2'(x)e^{-2x} = 0 \\ C_1'(x)e^{2x} - C_2'(x)e^{-2x} = tgx \end{cases}$$

$$\begin{cases} C_1'(x)\cos 2x + C_2'(x)\sin 2x = 0 \\ -C_1'(x)\sin 2x + C_2'(x)\cos 2x = 2tgx \end{cases}$$

$$\begin{cases} C_1'(x)e^{2x} + C_2'(x)e^{-2x} = 0 \\ C_1'(x)xe^{2x} - C_2'(x)e^{-2x} = 2tgx \end{cases}$$

$$y'' + 3y' + 2y = \frac{1}{e^x + 1}$$

differensial tenglamani o‘zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani aniqlang.

2 12

$$\begin{cases} C_1'(x)e^{-x} + C_2'(x)e^{-2x} = 0 \\ -C_1'(x)e^{-x} - 2C_2'(x)e^{-2x} = \dfrac{1}{e^x + 1} \end{cases}$$

$$\begin{cases} C_1'(x)\cos 2x + C_2'(x)\sin 2x = 0 \\ -C_1'(x)\sin 2x + C_2'(x)\cos 2x = \dfrac{1}{e^x + 1} \end{cases}$$

$$\begin{cases} C_1'(x)\cos 2x + C_2'(x)\sin 2x = 0 \\ -2C_1'(x)\sin 2x + 2C_2'(x)\cos 2x = \dfrac{1}{e^x + 1} \end{cases}$$

$$\begin{cases} C_1(x)e^{-x} + C_2(x)e^{-2x} = 0 \\ -C_1(x)e^{-x} - 2C_2(x)e^{-2x} = \dfrac{1}{e^x + 1} \end{cases}$$

$$y'' + y = \frac{1}{\sin x}$$

differensial tenglamani o‘zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani aniqlang.

2 12

$$\begin{cases} C_1'(x)\cos x + C_2'(x)\sin x = 0 \\ -C_1'(x)\sin x + C_2'(x)\cos x = \dfrac{1}{\sin x} \end{cases}$$

$$\begin{cases} C_1'(x)\cos 2x + C_2'(x)\sin 2x = 0 \\ -C_1'(x)\sin 2x + C_2'(x)\cos 2x = \dfrac{1}{\sin x} \end{cases}$$

$$\begin{cases} C_1'(x)\cos 2x + C_2'(x)\sin 2x = 0 \\ -2C_1'(x)\sin 2x + 2C_2'(x)\cos 2x = \dfrac{1}{\sin x} \end{cases}$$

$$\begin{cases} C_1(x)\cos x + C_2(x)\sin x = 0 \\ -C_1(x)\sin x + C_2(x)\cos x = \dfrac{1}{\sin x} \end{cases}$$

$$y'' - 2y' + y = \frac{e^x}{x}$$

differensial tenglamani  o‘zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani aniqlang.

2 12

$$\begin{cases} C_1'(x)e^x + C_2'(x)xe^x = 0 \\ C_1'(x)e^x + C_2'(x)(1+x)e^x = \dfrac{e^x}{x} \end{cases}$$

$$\begin{cases} C_1'(x)e^x + C_2'(x)e^{-x} = 0 \\ C_1'(x)e^x - C_2'(x)e^{-x} = \dfrac{e^x}{x} \end{cases}$$

$$\begin{cases} C_1'(x)e^x + C_2'(x)e^{-x} = 0 \\ C_1'(x)xe^x - C_2'(x)e^{-x} = \dfrac{e^x}{x} \end{cases}$$

$$\begin{cases} C_1'(x)e^x + C_2'(x)xe^x = \dfrac{e^x}{x} \\ C_1'(x)e^x + C_2'(x)(1+x)e^x = 0 \end{cases}$$

$$y'' + 2y' + y = \frac{3\sqrt{1+x}}{e^x}$$

differensial tenglamani o‘zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani aniqlang.

2 12

$$\begin{cases} C_1'(x)e^{-x} + C_2'(x)xe^{-x} = 0 \\ -C_1'(x)e^{-x} + C_2'(x)(1-x)e^{-x} = \dfrac{3\sqrt{1+x}}{e^x} \end{cases}$$

$$\begin{cases} C_1'(x)e^{x} + C_2'(x)xe^{x} = 0 \\ C_1'(x)e^{x} + C_2'(x)(1+x)e^{x} = \dfrac{3\sqrt{1+x}}{e^x} \end{cases}$$

$$\begin{cases} C_1'(x)e^{-x} + C_2'(x)e^{x} = 0 \\ -C_1'(x)e^{-x} + C_2'(x)e^{x} = \dfrac{3\sqrt{1+x}}{e^x} \end{cases}$$

$$\begin{cases} C_1'(x)e^{-x} + C_2'(x)e^{x} = \dfrac{3\sqrt{1+x}}{e^x} \\ -C_1'(x)e^{-x} + C_2'(x)e^{x} = 0 \end{cases}$$

$$y'' + 2y' + y = \frac{1}{xe^x}$$

differensial tenglamani o‘zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani aniqlang.

2 12

$$\begin{cases} C_1'(x)e^{-x} + C_2'(x)xe^{-x} = 0 \\ -C_1'(x)e^{-x} + C_2'(x)(1-x)e^{-x} = \dfrac{1}{xe^x} \end{cases}$$

$$\begin{cases} C_1'(x)e^{x} + C_2'(x)xe^{x} = 0 \\ C_1'(x)e^{x} + C_2'(x)(1+x)e^{x} = \dfrac{1}{xe^x} \end{cases}$$

$$\begin{cases} C_1'(x)e^{-x} + C_2'(x)e^{x} = 0 \\ -C_1'(x)e^{-x} + C_2'(x)e^{x} = \dfrac{1}{xe^x} \end{cases}$$

$$\begin{cases} C_1'(x)e^{-x} + C_2'(x)e^{x} = \frac{1}{xe^{x}} \\ -C_1'(x)e^{-x} + C_2'(x)e^{x} = 0 \end{cases}$$

$$y'' + y = 4ctgx$$

differensial tenglamani o‘zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani aniqlang.

2 12

$$\begin{cases} C_1'(x)\cos x + C_2'(x)\sin x = 0 \\ -C_1'(x)\sin x + C_2'(x)\cos x = 4ctgx \end{cases}$$

$$\begin{cases} C_1'(x)\cos 2x + C_2'(x)\sin 2x = 0 \\ -C_1'(x)\sin 2x + C_2'(x)\cos 2x = 4ctgx \end{cases}$$

$$\begin{cases} C_1'(x)\cos 2x + C_2'(x)\sin 2x = 0 \\ -2C_1'(x)\sin 2x + 2C_2'(x)\cos 2x = 4ctgx \end{cases}$$

$$\begin{cases} C_1(x)\cos x + C_2(x)\sin x = 0 \\ -C_1(x)\sin x + C_2(x)\cos x = 4ctgx \end{cases}$$

$$y'' + y = 2\sec^3 x$$

differensial tenglamani o‘zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani aniqlang.

2 12

$$\begin{cases} C_1'(x)\cos x + C_2'(x)\sin x = 0 \\ -C_1'(x)\sin x + C_2'(x)\cos x = 2\sec^3 x \end{cases}$$

$$\begin{cases} C_1'(x)\cos 2x + C_2'(x)\sin 2x = 0 \\ -C_1'(x)\sin 2x + C_2'(x)\cos 2x = 2\sec^3 x \end{cases}$$

$$\begin{cases} C_1'(x)\cos 2x + C_2'(x)\sin 2x = 0 \\ -2C_1'(x)\sin 2x + 2C_2'(x)\cos 2x = 2\sec^3 x \end{cases}$$

$$\begin{cases} C_1(x)\cos x + C_2(x)\sin x = 0 \\ -C_1(x)\sin x + C_2(x)\cos x = 2\sec^3 x \end{cases}$$

$y'' + 2y' = 3sh2x$

differensial tenglamani   o‘zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani aniqlang.

2 12

$$\begin{cases} C_1'(x) + C_2'(x)e^{-2x} = 0 \\ -2C_2'(x)e^{-2x} = 3shx \end{cases}$$

$$\begin{cases} C_1'(x)e^{x} + C_2'(x)e^{-2x} = 0 \\ C_1'(x)e^{x} - 2C_2'(x)e^{-2x} = 3shx \end{cases}$$

$$\begin{cases} C_1'(x)e^{x} + C_2'(x)e^{2x} = 0 \\ C_1'(x)e^{x} + 2C_2'(x)e^{2x} = 3shx \end{cases}$$

$$\begin{cases} C_1'(x) + C_2'(x)e^{2x} = 0 \\ 2C_2'(x)e^{2x} = 3shx \end{cases}$$

$$\begin{cases} C_1'(x) + C_2'(x)e^{-2x} = 0 \\ -2C_2'(x)e^{-2x} = 3shx \end{cases}$$

Sistema  qaysi differensial tenglamani  Lagranj usulida yechish uchun tuzilgan?

2 12

$y'' + 2y' = 3shx$

$y'' + 2y = 3shx$

$y'' - 2y = 3shx$

$y'' - 2y' = 3shx$

$$\begin{cases} C_1'(x)\cos x + C_2'(x)\sin x = 0 \\ -C_1'(x)\sin x + C_2'(x)\cos x = 4ctgx \end{cases}$$

Sistema  qaysi differensial tenglamani  Lagranj usulida yechish uchun tuzilgan?

2 12

$$y'' + y = 4ctgx$$

$$y'' + 2y' = 4ctgx$$

$$y'' + y' = 4ctgx$$

$$y'' - 2y' = 4ctgx$$

$$\begin{cases} C_1'(x) + C_2'(x)e^{3x} = 0 \\ C_2'(x)e^{3x} = ch2x \end{cases}$$

Sistema qaysi differensial tenglamani Lagranj usulida yechish uchun tuzilgan?

2 12

$$y'' - 3y' = 3ch2x$$

$$y'' - 3y = 2ch2x$$

$$y'' + 3y' = ch2x$$

$$y'' - 3y = 3chx$$

$$\begin{cases} C_1'(x)\cos x + C_2'(x)\sin x = 0 \\ -C_1'(x)\sin x + C_2'(x)\cos x = 2\sec^3 x \end{cases}$$

Sistema qaysi differensial tenglamani Lagranj usulida yechish uchun tuzilgan?

2 12

$$y'' + y = 2\sec^3 x$$

$$y'' - y = 2\sec^3 x$$

$$y'' + y' = 2\sec^3 x$$

$$y'' - y' = 2\sec^3 x$$

$$\begin{cases} C_1'(x)e^{-x} + C_2'(x)xe^{-x} = 0 \\ -C_1'(x)e^{-x} + C_2'(x)(1-x)e^{-x} = \dfrac{1}{xe^x} \end{cases}$$

Sistema qaysi differensial tenglamani Lagranj usulida yechish uchun tuzilgan?

2 12

$$y'' + 2y' + y = \frac{1}{xe^x}$$

$$y'' - 2y' + y = \frac{1}{xe^x}$$

$$y'' - y = \frac{1}{xe^x}$$

$$y'' + y' = \frac{1}{xe^x}$$

$$\begin{cases} C_1'(x)e^{x} + C_2'(x)xe^{x} = 0 \\ C_1'(x)e^{x} + C_2'(x)(1+x)e^{x} = \dfrac{e^x}{x} \end{cases}$$

Sistema qaysi differensial tenglamani Lagranj usulida yechish uchun tuzilgan?

2 12

$$y'' - 2y' + y = \frac{e^x}{x}$$

$$y'' + 2y' + y = \frac{e^x}{x}$$

$$y''+2y'+y=\frac{1}{xe^x}$$

$$y''-2y'+y=\frac{1}{xe^x}$$

$$\begin{cases} C_1'(x)e^{-x}+C_2'(x)xe^{-x}=0 \\ -C_1'(x)e^{-x}+C_2'(x)(1-x)e^{-x}=\dfrac{3\sqrt{1+x}}{e^x} \end{cases}$$

Sistema qaysi differensial tenglamani Lagranj usulida yechish uchun tuzilgan?

2 12

$$y''+2y'+y=\frac{3\sqrt{1+x}}{e^x}$$

$$y''-2y'+y=\frac{3\sqrt{1+x}}{e^x}$$

$$y''+y=\frac{3\sqrt{1+x}}{e^x}$$

$$y''-y=\frac{3\sqrt{1+x}}{e^x}$$

$$\begin{cases} C_1'(x)\cos 2x+C_2'(x)\sin 2x=0 \\ -C_1'(x)\sin 2x+C_2'(x)\cos 2x=tgx \end{cases}$$

Sistema qaysi differensial tenglamani Lagranj usulida yechish uchun tuzilgan?

2 12

$$y''+4y=2tgx$$

$$y''+4y=tgx$$

$$y'' - 4y = 2tgx$$

$$y'' - 4y = tgx$$

$$\begin{cases} C_1'(x)e^{-x} + C_2'(x)e^{-2x} = 0 \\ -C_1'(x)e^{-x} - 2C_2'(x)e^{-2x} = \dfrac{1}{e^x + 1} \end{cases}$$

Sistema qaysi differensial tenglamani Lagranj usulida yechish uchun tuzilgan?

2 12

$$y'' + 3y' + 2y = \frac{1}{e^x + 1}$$

$$y'' + y' - 2y = \frac{1}{e^x + 1}$$

$$y'' - 3y' + 2y = \frac{1}{e^x + 1}$$

$$y'' - y' - 2y = \frac{1}{e^x + 1}$$

$$\begin{cases} C_1'(x)e^{x} + C_2'(x)e^{-2x} = 0 \\ C_1'(x)e^{x} - 2C_2'(x)e^{-2x} = \dfrac{1}{e^x + 1} \end{cases}$$

Sistema qaysi differensial tenglamani Lagranj usulida yechish uchun tuzilgan?

2 12

$$y'' + y' - 2y = \frac{1}{e^x + 1}$$

$$y'' + 3y' + 2y = \frac{1}{e^x + 1}$$

$$y'' - 3y' + 2y = \frac{1}{e^x + 1}$$

$$y'' - y' - 2y = \frac{1}{e^x + 1}$$

Differensial tenglamalar sistemasini noma’lumlarni yo‘qotish usulida yeching:

$$\begin{cases} x' = 2y, & x(0) = 0 \\ y' = -2x, & y(0) = 2 \end{cases}$$

2 13

$$\begin{cases} x(t) = 2\sin 2t \\ y(t) = 2\cos 2t \end{cases}$$

$$\begin{cases} x(t) = -2\sin 2t \\ y(t) = 2\cos 2t \end{cases}$$

$$\begin{cases} x(t) = 2\,\mathrm{sh}\, 2t \\ y(t) = 2\,\mathrm{ch}\, 2t \end{cases}$$

$$\begin{cases} x(t) = -2sh2t \\ y(t) = 2ch2t \end{cases}$$

Differensial tenglamalar sistemasini noma’lumlarni yo‘qotish usulida yeching:

$$\begin{cases} x' = 2y, & x(0) = 1 \\ y' = -2x, & y(0) = 0 \end{cases}$$

2 13

$$\begin{cases} x(t) = \cos 2t \\ y(t) = -\sin 2t \end{cases}$$

$$\begin{cases} x(t) = cos2t \\ y(t) = \sin 2t \end{cases}$$

$$\begin{cases} x(t) = 1 + \sin 2t \\ y(t) = 1 - \cos 2t \end{cases}$$

$$\begin{cases} x(t) = 1 - \sin 2t \\ y(t) = 1 - \cos 2t \end{cases}$$

Differensial tenglamalar sistemasini noma’lumlarni yo‘qotish usulida yeching:

$$\begin{cases} x' = 2y, & x(0) = 0 \\ y' = -2x, & y(0) = 1 \end{cases}$$

2 13

$$\begin{cases} x(t) = \sin 2t \\ y(t) = \cos 2t \end{cases}$$

$$\begin{cases} x(t) = -\sin 2t \\ y(t) = \cos 2t \end{cases}$$

$$\begin{cases} x(t) = 2\sin 2t \\ y(t) = 2\cos 2t \end{cases}$$

$$\begin{cases} x(t) = -sh2t \\ y(t) = ch2t \end{cases}$$

Differensial tenglamalar sistemasini noma’lumlarni yo‘qotish usulida yeching:

$$\begin{cases} x' = 2y, & x(0) = -2 \\ y' = -2x, & y(0) = 0 \end{cases}$$

2 13

$$\begin{cases} x(t) = -2\cos 2t \\ y(t) = 2\sin 2t \end{cases}$$

$$\begin{cases} x(t) = 2\sin 2t \\ y(t) = 2\cos 2t \end{cases}$$

$$\begin{cases} x(t) = -2\cos 2t \\ y(t) = -2\sin 2t \end{cases}$$

$$\begin{cases} x(t) = 2\cos 2t \\ y(t) = -2\sin 2t \end{cases}$$

Differensial tenglamalar sistemasini noma'lumlarni yo'qotish usulida yeching:

$$\begin{cases} x' = 2y, \quad x(0) = -1 \\ y' = -2x, \quad y(0) = 0 \end{cases}$$

2 13

$$\begin{cases} x(t) = -\cos 2t \\ y(t) = \sin 2t \end{cases}$$

$$\begin{cases} x(t) = -cos2t \\ y(t) = -\sin 2t \end{cases}$$

$$\begin{cases} x(t) = -\sin 2t \\ y(t) = -\cos 2t \end{cases}$$

$$\begin{cases} x(t) = -ch2t \\ y(t) = sh2t \end{cases}$$

Differensial tenglamalar sistemasini noma'lumlarni yo'qotish usulida yeching:

$$\begin{cases} x' = -2y, \quad x(0) = -1 \\ y' = 2x, \quad y(0) = 0 \end{cases}$$

2 13

$$\begin{cases} x(t) = -cos2t \\ y(t) = -\sin 2t \end{cases}$$

$$\begin{cases} x(t) = -\cos 2t \\ y(t) = \sin 2t \end{cases}$$

$$\begin{cases} x(t) = -\sin 2t \\ y(t) = -\cos 2t \end{cases}$$

$$\begin{cases} x(t) = -ch2t \\ y(t) = sh2t \end{cases}$$

Differensial tenglamalar sistemasini noma'lumlarni yo'qotish usulida yeching:

$$\begin{cases} x' = -2y, & x(0) = 1 \\ y' = 2x, & y(0) = 0 \end{cases}$$

2 13

$$\begin{cases} x(t) = cos2t \\ y(t) = \sin 2t \end{cases}$$

$$\begin{cases} x(t) = \cos 2t \\ y(t) = -\sin 2t \end{cases}$$

$$\begin{cases} x(t) = \sin 2t \\ y(t) = -\cos 2t \end{cases}$$

$$\begin{cases} x(t) = ch2t \\ y(t) = sh2t \end{cases}$$

Differensial tenglamalar sistemasini noma'lumlarni yo'qotish usulida yeching:

$$\begin{cases} x' = -2y, & x(0) = 0 \\ y' = 2x, & y(0) = 1 \end{cases}$$

2 13

$$\begin{cases} x(t) = -\sin 2t \\ y(t) = \cos 2t \end{cases}$$

$$\begin{cases} x(t) = -\sin 2t \\ y(t) = -\cos 2t \end{cases}$$

$$\begin{cases} x(t) = -\sin 2t \\ y(t) = \cos 2t \end{cases}$$

$$\begin{cases} x(t) = ch2t \\ y(t) = -sh2t \end{cases}$$

Differensial tenglamalar sistemasini noma’lumlarni yo‘qotish usulida yeching:

$$\begin{cases} x' = -2y, \quad x(0) = 0 \\ y' = 2x, \quad y(0) = -1 \end{cases}$$

2 13

$$\begin{cases} x(t) = \sin 2t \\ y(t) = -\cos 2t \end{cases}$$

$$\begin{cases} x(t) = -\sin 2t \\ y(t) = \cos 2t \end{cases}$$

$$\begin{cases} x(t) = -\sin 2t \\ y(t) = -\cos 2t \end{cases}$$

$$\begin{cases} x(t) = ch2t \\ y(t) = sh2t \end{cases}$$

Differensial tenglamalar sistemasini noma’lumlarni yo‘qotish usulida yeching:

$$\begin{cases} x' = -2y, & x(0) = 2 \\ y' = 2x, & y(0) = 0 \end{cases}$$

2 13

$$\begin{cases} x(t) = 2cos2t \\ y(t) = 2\sin 2t \end{cases}$$

$$\begin{cases} x(t) = 2\cos 2t \\ y(t) = -2\sin 2t \end{cases}$$

$$\begin{cases} x(t) = 2\sin 2t \\ y(t) = -2\cos 2t \end{cases}$$

$$\begin{cases} x(t) = ch2t \\ y(t) = sh2t \end{cases}$$

Differensial tenglamalar sistemasini Eyler usulida yeching:

$$\begin{cases} x' = y - 2x \\ y' = 3x \end{cases}$$

2 13

$$\begin{cases} x = C_1e^t + C_2e^{-3t} \\ y = 3C_1e^t - C_2e^{-3t} \end{cases}$$

$$\begin{cases} x = C_1e^t + C_2e^{2t} \\ y = 3C_1e^t + 4C_2e^{2t} \end{cases}$$

$$\begin{cases} x = C_1e^t + C_2e^{2t} \\ y = 3C_1e^t - 4C_2e^{2t} \end{cases}$$

$$\begin{cases} x = C_1e^t + C_2e^{-3t} \\ y = 3C_1e^{-t} - C_2e^{3t} \end{cases}$$

Differensial tenglamalar sistemasini Eyler usulida yeching:

$$\begin{cases} x' = 2x + y \\ y' = 3x \end{cases}$$

2 13

$$\begin{cases} x = C_1 e^{-t} + C_2 e^{3t} \\ y = -3C_1 e^{-t} + C_2 e^{3t} \end{cases}$$

$$\begin{cases} x = C_1 e^{t} + C_2 e^{-3t} \\ y = 3C_1 e^{t} - C_2 e^{-3t} \end{cases}$$

$$\begin{cases} x = C_1 e^{-t} + C_2 e^{3t} \\ y = 3C_1 e^{-t} + C_2 e^{3t} \end{cases}$$

$$\begin{cases} x = C_1 e^{t} + C_2 e^{2t} \\ y = 3C_1 e^{t} + 4C_2 e^{2t} \end{cases}$$

Eyler usulida Koshi masalasini yeching:

$$\begin{cases} x' = -y + 2 \\ y' = x + 1, \end{cases} \qquad x(0) = -1,\ y(0) = 0.$$

2 13

$$\begin{cases} x(t) = 2\sin t - 1 \\ y(t) = -2\cos t + 2 \end{cases}$$

$$\begin{cases} x(t) = 2\sin t + 1 \\ y(t) = -2\cos t + 2 \end{cases}$$

$$\begin{cases} x(t) = -2\sin t - 1 \\ y(t) = 2\cos t - 2 \end{cases}$$

$$\begin{cases} x(t) = \cos t - 1 \\ y(t) = \sin t + 2 \end{cases}$$

Eyler usulida Koshi masalasini yeching:

$$\begin{cases} x' = -y + 2 \\ y' = x + 1, \end{cases} \quad x(0) = 0,\ y(0) = 2.$$

2 13

$$\begin{cases} x(t) = \cos t - 1 \\ y(t) = \sin t + 2 \end{cases}$$

$$\begin{cases} x(t) = \sin t - 1 \\ y(t) = -\cos t + 2 \end{cases}$$

$$\begin{cases} x(t) = -\cos t + 1 \\ y(t) = -\sin t + 2 \end{cases}$$

$$\begin{cases} x(t) = \sin t \\ y(t) = \cos t + 1 \end{cases}$$

Eyler usulida Koshi masalasini yeching:

$$\begin{cases} x' = -y + 2 \\ y' = x - 1, \end{cases} \quad x(0) = 1,\ y(0) = 0.$$

2 13

$$\begin{cases} x(t) = 2\sin t + 1 \\ y(t) = -2\cos t + 2 \end{cases}$$

$$\begin{cases} x(t) = 2\sin t - 1 \\ y(t) = -2\cos t + 2 \end{cases}$$

$$\begin{cases} x(t) = -\sin t + 1 \\ y(t) = \cos t + 2 \end{cases}$$

$$\begin{cases} x(t) = -2\sin t + 1 \\ y(t) = -2\cos t + 2 \end{cases}$$

Eyler usulida Koshi masalasini yeching:

$$\begin{cases} x' = -y+1 \\ y' = x-2, \end{cases} \quad x(0)=1,\ y(0)=1.$$

2 13

$$\begin{cases} x(t) = -\cos t + 2 \\ y(t) = -\sin t + 1 \end{cases}$$

$$\begin{cases} x(t) = 2\sin t + 1 \\ y(t) = -2\cos t + 2 \end{cases}$$

$$\begin{cases} x(t) = -\sin t + 1 \\ y(t) = \cos t + 2 \end{cases}$$

$$\begin{cases} x(t) = -\cos t + 2 \\ y(t) = \sin t + 1 \end{cases}$$

Eyler usulida Koshi masalasini yeching:

$$\begin{cases} x' = -y+1 \\ y' = x-2, \end{cases} \quad x(0)=2,\ y(0)=0.$$

2 13

$$\begin{cases} x(t) = \sin t + 2 \\ y(t) = -\cos t + 1 \end{cases}$$

$$\begin{cases} x(t) = -\sin t + 2 \\ y(t) = -\cos t + 1 \end{cases}$$

$$\begin{cases} x(t) = -\cos t + 2 \\ y(t) = -\sin t + 1 \end{cases}$$

$$\begin{cases} x(t) = \sin t + 1 \\ y(t) = -\cos t + 2 \end{cases}$$

Differensial tenglamalar sistemasini Eyler usulida yeching:

$$\begin{cases} x' = 2x + y \\ y' = 3x + 4y \end{cases}$$

2 13

$$x = C_1 e^{t} + C_2 e^{5t}$$
$$y = -C_1 e^{t} + 3C_2 e^{5t}$$

$$x = C_1 e^{-t} + C_2 e^{5t}$$
$$y = -C_1 e^{-t} + 3C_2 e^{-5t}$$

$$x = C_1 e^{-t} + C_2 e^{5t}$$
$$y = C_1 e^{-t} + 3C_2 e^{-5t}$$

$$x = C_1 e^{t} + C_2 e^{5t}$$
$$y = C_1 e^{t} + 3C_2 e^{5t}$$

Differensial tenglamalar sistemasini Eyler usulida yeching:

$$\begin{cases} x' = -2x + y \\ y' = 3x - 6e^{-2t} \end{cases}$$

2 13

$$\begin{cases} x = C_1 e^{t} + C_2 e^{-3t} + 2e^{-2t} \\ y = -3C_1 e^{t} + C_2 e^{-3t} \end{cases}$$

$$\begin{cases} x = C_1 e^{t} + C_2 e^{-3t} - e^{-2t} \\ y = 3C_1 e^{t} - C_2 e^{-3t} - 3e^{-2t} \end{cases}$$

$$\begin{cases} x = C_1 e^{-t} + C_2 e^{3t} + 2e^{-2t} \\ y = -3C_1 e^{-t} + 2C_2 e^{3t} - 2e^{-2t} \end{cases}$$

$$\begin{cases} x = C_1e^{-t} + C_2e^{3t} + 2e^{2t} \\ y = -3C_1e^{-t} + C_2e^{3t} \end{cases}$$

Differensial tenglamalar sistemasini Eyler usulida yeching:

$$\begin{cases} x' = 2x + y \\ y' = 3x - 4e^{t} \end{cases}$$

2 13

$$\begin{cases} x = C_1e^{-t} + C_2e^{3t} - e^{t} \\ y = -3C_1e^{-t} + C_2e^{3t} + e^{t} \end{cases}$$

$$\begin{cases} x = C_1e^{-t} + C_2e^{3t} - 2e^{t} \\ y = -3C_1e^{-t} + C_2e^{3t} + 2e^{t} \end{cases}$$

$$\begin{cases} x = C_1e^{t} + C_2e^{-3t} - e^{t} \\ y = -3C_1e^{t} + C_2e^{-3t} + e^{t} \end{cases}$$

$$\begin{cases} x = C_1e^{t} + C_2e^{-3t} - 2e^{t} \\ y = -3C_1e^{t} + C_2e^{-3t} + 2e^{t} \end{cases}$$

Operatsion hisob yordamida Koshi masalasini yechishning imkoni bormi?

$$\boldsymbol{x'' - 9x = \frac{1}{t^2} \quad x(0) = 1; \;\; x'(0) = 1;}$$

3 14

yo'q

ha

bo'lishi mumkin

barcha javoblar to'g'ri

Operatsion hisob yordamida Koshi masalasini yeching.

$$x'' - 5x' + 6x = 0$$
$$x(0) = 0\,;\;\; x'(0) = 1;$$

3 14

$e^{3t} - e^{2t}$

$e^{4t} - e^{3t}$

$2e^{3t} - e^{5t}$

$2e^{3t} - te^{2t}$

Operatsion hisob yordamida Koshi masalasini yeching.

$$x'' + 2x' - 15x = 0$$
$$x(0) = 0;\;\; x'(0) = 1;$$

3 14

$e^{3t} - e^{-5t};$

$2(e^{3t} - e^{2t})$

$e^{5t} - e^{3t}$

$3e^{3t} - 2e^{5t}$

Operatsion hisob yordamida Koshi masalasini yeching.

$$x'' - 5x' + 6x = 0$$
$$x(0) = 0;\;\; x'(0) = 2;$$

3 14

$2(e^{3t} - e^{2t})$

$e^{3t} - e^{2t}$

$e^{4t} - e^{3t}$

$3e^{3t} - 2e^{2t}$

Operatsion hisob yordamida Koshi masalasini yeching.

$x'' + x = 0$

$x(0) = 0\,;\;\; x'(0) = 1;$

3 14

$sint$

$cost$

$2e^{t}$

$e^{3t}sint$

Operatsion hisob yordamida Koshi masalasini yeching.

$x'' + x = 2e^{t}$

$x(0) = 0;\;\; x'(0) = 0;$

3 14

$e^{t} - (cost + sint);$

$2(e^{t} - e^{2t}) + cost;$

$e^{t} + sin2t - e^{3t}$

$-2e^{2t} + sint - cos2t$

Operatsion hisob yordamida Koshi masalasini yeching.

$x' - x = 0 \quad\; x(0) = 1;$

3 14

$e^t$

$2cos2t;$

$2(e^{3t}cos2t - e^{2t});$

$\frac{31e^{5t}}{29}$

Operatsion hisob yordamida Koshi masalasini yeching.

$x'' + x' = 0 \quad x(0) = 0; \; x'(0) = 1$

3 14

$1 - e^{-t}$

$1 - e^{2t}$

$3 - e^{2t}$

$2 - e^{-t}$

Operatsion hisob yordamida Koshi masalasini yeching.

$x'' - 2x' + 5x = 0$

$x(0) = 0; \; x'(0) = 2;$

3 14

$e^t sin2t$

$2e^{3t} sint$

$e^{4t} cos2t;$

$e^t - sin2t$

Operatsion hisob yordamida Koshi masalasini yeching.

$$x'' - 9x = 0$$

$$x(0) = 0; \;\; x'(0) = 1$$

3 14

$$\frac{1}{6}(\, e^{3t} - e^{-3t})$$

$$2e^{t} - 3e^{3t}$$

$$\frac{1}{2}(\, e^{3t} - e^{-3t})$$

$$3e^{3t} - 2e^{-3t}$$

Operatsion hisob yordamida Koshi masalasini yeching.

$$x'' - 9x' = 0$$

$$x(0) = 0; \;\; x'(0) = 1;$$

3 14

$$\frac{1}{9}(e^{9t} - 1)$$

$$\frac{1}{9}e^{-3t} sint + e^{9t}$$

$$\frac{2}{9}e^{3t} cos9t + \; e^{-9t};$$

$$\frac{1}{9}e^{-3t} + cos9t$$

Operatsion hisob yordamida Koshi masalasini yeching.

$$x'' + 2x' = e^{t} \quad x(0) = 0; \;\; x'(0) = 1;$$

3 14

$$\frac{e^{t}}{3} - \frac{e^{-2t}}{3}$$

$$\frac{2}{3}(e^{3t} - e^{2t})$$

$$\frac{e^{4t}-e^{3t}}{3}$$

$$e^{3t}-\frac{2e^{2t}}{3}$$

Operatsion hisob yordamida Koshi masalasini yeching.

$$x''+4x'+8x=0$$

$$x(0)=0\,;\ \ x'(0)=2;$$

3 14

$$e^{-2t}sin2t$$

$$e^{-2t}cos2t$$

$$2e^{t}cos2t$$

$$e^{3t}sin2t$$

Operatsion hisob yordamida Koshi masalasini yeching.

$$x''-8x'=2e^{2t}\quad x(0)=0;\ \ x'(0)=1;$$

3 14

$$\frac{e^{8t}}{6}-\frac{e^{2t}}{6}$$

$$\frac{1}{6}(e^{3t}-e^{2t})$$

$$\frac{e^{4t}-e^{3t}}{8}$$

$$\frac{e^{8t}}{6}-\frac{e^{2t}}{6}$$

Operatsion hisob yordamida Koshi masalasini yeching.

$$x'' + 4x' = 0$$

$$x(0) = 0\,; \;\; x'(0) = 1;$$

3 14

$$\frac{1}{4} - \frac{e^{-4t}}{4}$$

$$\frac{1}{4}(e^{4t} - e^{2t})$$

$$\frac{1}{4}(e^{4t} - e^{4t})$$

$$2e^{t}$$

Operatsion hisob yordamida Koshi masalasini yeching.

$$x'' - 4x' + 5x = 0 \quad x(0) = 0; \;\; x'(0) = 1;$$

3 14

$$e^{2t} sint$$

$$e^{3t} cost$$

$$-e^{5t}\text{sin2t}$$

$$e^{4t} - e^{3t}$$

Operatsion hisob yordamida Koshi masalasini yeching.

$$x'' + 5x' + 6x = 0$$

$$x(0) = 0\,; \;\; x'(0) = 1;$$

3 14

$$e^{-2t} - e^{-3t};$$

$$e^{4t} - e^{3t}$$

$\frac{e^{-2t}-e^{-3t}}{3}$;

$2e^{2t} - sin3t$

Operatsion hisob yordamida Koshi masalasini yeching.

$x'' + 4x' + 5x = 0 \quad x(0) = 0; \; x'(0) = -2;$

3 14

$-2e^{-2t}sint$ ;

$e^{4t}cos3t$

$-e^{5t}$sin2t

$e^{2t}sint$

Operatsion hisob yordamida Koshi masalasini yeching.

$x' - 5x = 0$

$x(0) = 3$ ;

3 14

$3e^{5t}$

$e^{5t} + sint;$

$2e^{3t}$

$e^{3t} - cos3t$

Operatsion hisob yordamida Koshi masalasini yeching.

$x'' + 5x' = 0 \quad x(0) = 0; \; x'(0) = 5;$

3 14

$1 - e^{-5t}$

$cht - e^{2t}$

$sin2t - 1$

$1 - cos5t$

**Asl va tasvirlar jadvali.**

| № | ASL | TASVIR |
|---|---|---|
| 1 | $\eta(t)$ | $\frac{1}{p}$ |
| 2 | $e^{\alpha t}$ | $\frac{1}{p-\alpha}$ |
| 3 | $t^n$ | $\frac{n!}{p^{n+1}}, \quad n \in N$ |
| 4 | $sin\beta t$ | $\frac{\beta}{p^2+\beta^2}$ |
| 5 | $cos\beta t$ | $\frac{p}{p^2+\beta^2}$ |
| 6 | $sh\beta t$ | $\frac{\beta}{p^2-\beta^2}$ |
| 7 | $ch\beta t$ | $\frac{p}{p^2-\beta^2}$ |
| 8 | $t^n e^{at}$ | $\frac{n!}{(p-\alpha)^{n+1}}$ |
| 9 | $e^{\alpha t} sin\beta t$ | $\frac{\beta}{(p-\alpha)^2+\beta^2}$ |
| 10 | $e^{\alpha t} cos\beta t$ | $\frac{p-\alpha}{(p-\alpha)^2+\beta^2}$ |
| 11 | $t \cdot sin\beta t$ | $\frac{2\beta p}{(p^2+\beta^2)^2}$ |
| 12 | $t \cdot cos\beta t$ | $\frac{p^2-\beta^2}{(p^2+\beta^2)^2}$ |