

-
- 1) $y'' - 2y' - 3y = e^{4x}$;
2) $xy'' = y' \ln \frac{y'}{x}$;
3) $y'''(x-1) - y'' = 0$;
4) $1 + y'^2 = yy''$
-

✗ 1), 2), 4)

2. Quyidagi tenglama uchun integralovchi ko‘paytuvchi qanday bo‘ladi:

$$ydx - (x + y^2)dy = 0 ?$$

✓ $\mu(y) = \frac{1}{y^2}$

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

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

4. $y'' = e^{-x}$ tenglamaning $y(0) = 1$, $y'(0) = 0$ shartni qanoatlantiruvchi yechimini toping

✓ $y = e^{-x} + x$

5. $y'' = \sin 2x$ tenglamaning umumi yechimini toping

✓ $y = -\frac{1}{4} \sin 2x + C_1 x + C_2$

6. 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

7. Tenglamani yeching: $x' + x = e^{-t}$, $x(0) = 1$.

- ✗ $x(t) = (t+1)e^t$.

8. Rikkati tenglamasini aniqlang

- ✓ $y' = y^2 + 2y + 2$

9. Tasvirning asl funksiyasi topilsin: $F(p) = \frac{p}{(p^2 - 1)^2}$

- ✓ $f(t) = \frac{1}{2}t \cdot \sin t$

10. Quyidagilarning qaysi biri 1-tartibli chiziqli differensial tenglama?

- ✗ $y' + x \sin y + 5 = 0$

11. Aslning tasvirini toping: $f(t) = e^{2t} \sin t$

- ✓ $F(p) = \frac{1}{(p - 2)^2 + 1}$

12. Tenglamani yeching: $x'' + x' = 1$, $x(0) = 0$, $x'(0) = 1$

✓ $x(t) = t$.

13. $y'' - y = xe^x$ tenglamaning umumiy yechimini toping

✓ $y = C_1 e^{-x} + \left(C_2 + \frac{x^2 - x}{4} \right) e^x$

14. Differensial tenglamani xususiy yechimini toping. $y' = 8\sqrt{y}$ $y(0) = 4$

✓ $y = (4x + 2)^2$

15. Tenglamani yeching: $x'' - 4x' + 3x = 3$,
 $x(0) = 0$, $x'(0) = 1$

✓ $x(t) = 1 - 2e^t + e^{3t}$

16. Fundamental yechimlari sistemasi $y_1 = e^{2x}$, $y_2 = e^{3x}$ bo‘lgan chiziqli bir jinsli differensial tenglama tuzing.

✗ $y'' + 5y' + 6y = 0$

17. Quyidagilarning qaysi biri 1-tartibli chiziqli differensial tenglamaning umumiy ko‘rinishi?

✓ $y' + p(x) \cdot y + q(x) = 0$

18. Differensial tenglamani xususiy yechimini toping:
 $y' \sin x - y \ln y = 0,$
 $y(\pi/2) = 1$

✓ $y = 1$

19. $y'' - 5y = \sin 5x$ tenglamaning umumiyl yechimini toping

$$y = C_1 e^{-\sqrt{5}x} + C_2 e^{\sqrt{5}x} -$$

✓
$$-\frac{1}{30} \sin 5x$$

20. Differensial tenglamada uning umumiyl yechimidan ixtiyoriy o'zgarmasning hech bir qiymatida hosil qilish mumkin bo'lmasagan yechim nima deb ataladi?

✓ maxsus yechim

Imtihon 1-курс Дифференциал тенгламалар фанидан якуний назорат-МТН1224

Talaba ALIMOV AKBAR SHUXRATOVICH

Guruh 651-20 KTo`

Boshlandi 07.07.2021 11:04

Tugadi 07.07.2021 11:45

To'g'ri 16

Foiz 80.0

1. Tenglamani yeching: $x'' + 4x = t$,
 $x(0) = 1, x'(0) = 0$.

✓ $x(t) = \frac{1}{4}t + \cos 2t - \frac{1}{8}\sin 2t$.

2. $F(y, y', y'', \dots, y^{(n)}) = 0$ tenglamaning tartibini pasaytirish uchun qanday almashtirish bajariladi?

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

3. $y'' - y = 0$ tenglamaning $y(0) = 0, y'(0) = 2$ boshlang'ich shartlarni qanoatlantiruvchi yechimini toping

✓ $y = e^x - e^{-x}$

4. Tenglamani yeching: $x'' = 1, x(0) = 0, x'(0) = 1$.

✓ $x(t) = t + \frac{1}{2}t^2$.

5. Bir jinsli differensial tenglama uchun Koshi masalasi aniqlang

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

6. $y' = \frac{a_1x + b_1y + c_1}{a_2x + b_2y + c_2}$ tenglama qachon o'zgaruvchilari ajraladigan differensial tenglamaga keladi?

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

7. Differensial tenglamani yeching. $y' + \frac{2y}{x} = x^3$

✓ $y = \frac{x^4}{6} + \frac{C}{x^2}$

8. $y'' + 9y = 0$ tenglamaning $y(0) = 0$, $y'\left(\frac{\pi}{4}\right) = -3$, boshlang'ich shartlarni qanoatlantiruvchi yechimini toping

✓ $y = \sqrt{2} \sin 3x$

9. $y'' - 4y' - 5y = x$ tenglamaning umumiy yechimini toping?

✓ $y = C_1 e^{-x} + C_2 e^{5x} - \frac{1}{5}x + \frac{4}{25}$

10. Aslning tasvirini toping: $f(t) = t$

✓ $F(p) = \frac{1}{p^2}$

11. $y' = \frac{2xy}{x^2 - y^2}$ differensial tenglamani yeching

$x^2 - y^2 = Cx$

12. Quyidagilarni qaysi biri bir jinsli differnsial tenglama?

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

13. Differensial tenglamani to‘g‘ri tenglikka aylantiruvchi $y = \varphi(x, C)$ funksiyaga tenglamaning deyiladi.

umumiy yechimi

14. $y''' - 5y'' + 4y = 0$ tenglananining xarakteristik tenglamasi ildizlarini toping

$k_1 = -1, k_2 = 1,$
 $k_3 = -2, k_4 = 2$

15. $y'' - 4y' + 3y = e^{3x}$ tenglananining umumiy yechimini toping

$y = C_1 e^x + \left(C_2 - \frac{x}{3} \right) e^{3x}$

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

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

17. Aslning tasvirini toping: $f(t) = 2 \sin t - \cos t$

✓ $F(p) = \frac{2-p}{p^2+1}$

18. $y''' - 2y'' + y' = 0$ tenglamaning umumiyligini yechimini toping

✓ $y = C_1 + C_2 e^x + C_3 x e^x$

19. $y' + P(x)y = Q(x)$ tenglamanini yechishning Bernulli usulida umumiyligini ko'rishda izlanadi

✓ $y = uv$

20. Tenglamani yeching: $x'' + 2x' + x = t,$
 $x(0) = 0, x'(0) = 0.$

✗ $x(t) = 2e^{-t} + t - 2.$

Imtihon 1-курс Дифференциал тенгламалар фанидан якуний назорат-MTH1224

Talaba ABDULLAYEVA NAFOSAT SAMANDAR QIZI

Guruh 651-20 KTo`

Boshlandi 07.07.2021 11:33

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To'g'ri

14

Foiz

70.0

1. Differensial tenglamani to‘g‘ri tenglikka aylantiruvchi $y = \varphi(x, C)$ funksiyaga tenglamaning deyiladi.

✓ umumi yechimi

2. $y'' + 2y' - 3y = e^{2x}$ tenglamaning umumi yechimini toping

✓ $y = C_1 e^{-3x} + C_2 e^x + \frac{1}{5} e^{2x}$

3. Tasvirning asl funksiyasi topilsin: $F(p) = \frac{e^{-3p}}{p+2}$

✗ $f(t) = e^{-2(t-3)} \eta(t+3)$

4. Aslning tasvirini toping: $f(t) = te^{ta}$

✓ $F(p) = \frac{1}{(p-a)^2}$

5. Quyidagi tenglamalarning qaysi biri o‘zgaruvchilari ajraladigan tenglama?

✗ $(y+x^2)dy+xydx=0$

6. Ushbu $y'' + 2y' = 3\sin 2x$ differensial tenglamani o‘zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani aniqlang.

✓
$$\begin{cases} C_1'(x) + C_2'(x)e^{-2x} = 0 \\ -2C_2'(x)e^{-2x} = 3\sin x \end{cases}$$

7. Bir jinsli differential tenglama uchun Koshi masalasi aniqlang

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

8. Quyidagilardan qaysi biri birinchi tartibli differential tenglama uchun Koshi masalasi bo‘ladi?

✗
$$\begin{cases} y' = f(x, y) \\ a < x < b \end{cases}$$

9. Tenglamani yeching: $x' + x = e^t$, $x(0) = 0$

✓ $x(t) = sh t$

10. Aslning tasvirini toping: $f(t) = t + 2e^t$

✗ $F(p) = \frac{2p^2 + p - 1}{p^2(p+1)}$

11. $y'' - 4y' - 5y = x$ tenglananing umumiy yechimini toping?

✗ $y = C_1 e^{-3x} + C_2 e^x - \frac{1}{5}x$

12. $x^2y' = y^2 + xy$ differensial tenglamani yeching

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

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

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

14. Differensial tenglamalar sistemasini noma'lumlarni yo'qotish usulida yeching:

$\begin{cases} y' = z - 2y \\ z' = 3y \end{cases}$

$\begin{cases} y(x) = C_1 e^x + C_2 e^{2x} \\ z(x) = 3C_1 e^x + 4C_2 e^{2x} \end{cases}$

15. Quyidagilarni qaysi biri chiziqli differnsial tenglamani yechishning almashtirishi hisoblanadi

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

16. $y'' + y' = x$ tenglananining umumiyligini yechimini toping

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

17. Quyida shartlardan qaysi biri bajarilsa $y' = f(x, y)$ tenglama nolinchi tartibli bir jinsli differensial tenglama bo‘ladi?

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

18. Chiziqli differensial tenglamani qaysi usulda yechiladi?

- Bernulli

19. $1 + y'^2 = yy''$ tenglamada qanday almashtirish bajariladi?

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

20. $y^{IV} + 5y'' + 4y = 0$ tenglananining xarakteristik tenglamasi ildizlarini toping

- $k = \pm i, k = \pm 2$

Imtihon 1-курс Дифференциал тенгламалар фанидан якуний назорат-MTH1224

Talaba ISOQOVA MUXLISA FAXRIDDIN QIZI

Guruh 651-20 KTo`

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To'g'ri 10

Foiz 50.0

1. $y'' - y = xe^x$ tenglamaning umumiyligini yechimini toping

✓ $y = C_1 e^{-x} + \left(C_2 + \frac{x^2 - x}{4} \right) e^x$

2. $y'''(x-1) - y'' = 0$ tenglamada qanday almashtirish bajariladi?

✗ $p = y', \quad p' = y''$

3. Rikkati tenglamasini aniqlang

✓ $y' = a(x)y^2 + b(x)y + c(x)$

4. Tenglamani yeching:
 $x'' + 2x' + x = \sin t,$
 $x(0) = 0, x'(0) = -1$

✓ $x(t) = \frac{1}{2} (e^{-t} - te^{-t} - \cos t).$

5. Ushbu $y' = \frac{x+2y-3}{x-1}$ tenglamani bir jinsliga keltirish uchun qanday almashtirish bajariladi?

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

6. $y'' - 2y' = x^2 - x$ tenglamaning umumiyligini yechimini toping

✓ $y = C_1 + C_2 e^{2x} - \frac{x^3}{6}$

7. $y'' - 5y = \sin 5x$ tenglamaning umumiyligini yechimini toping

$y = C_1 e^{-\sqrt{5}x} + C_2 e^{\sqrt{5}x} -$
✓ $- \frac{1}{30} \sin 5x$

8. Quyidagilarni qaysi biri bir jinsli differensial tenglamaning ko'rnishini ifodalash

✗ $y' = \varphi(y)$

9. Fundamental yechimlari sistemasi $y_1 = e^{2x}$, $y_2 = e^{3x}$ bo'lgan chiziqli bir jinsli differensial tenglama tuzing.

✗ $y'' + 2y' - 3y = 0$

10. $x^2 y' = y^2 + xy$ differensial tenglamani yeching

✓ $y = \frac{x}{C - \ln|x|}$

11. Tenglamani yeching: $x' - x = 1$, $x(0) = -1$.

✗ $x(t) = 1$.

12. Tenglamani yeching: $x'' + 3x' = e^t$,
 $x(0) = 0, x'(0) = -1$.

✓ $x(t) = \frac{1}{4}e^t + \frac{5}{12}e^{-3t} - \frac{2}{3}$.

13. $y'' + 5y' + 6y = 0$ tenglamaning $y(0) = 1, y'(0) = -6$, boshlang‘ich shartlarni qanoatlantiruvchi yechimini toping

✗ $y = 4e^{-3x} + 3e^{-2x}$

14. $y''' = \cos^2 x$ tenglamaning $y(0) = \frac{1}{32}, y'(0) = 0, y''(0) = \frac{1}{8}, y'''(0) = 0$ shartlarni qanoatlantiruvchi yechimini toping

✗ $y = \frac{1}{48}x^4 + \frac{1}{32}\cos 2x$

15. $y'' = \sin 2x$ tenglamaning umumi yechimini toping

✗ $y = \frac{1}{4}\sin 2x - C_1x^2$

16. Ushbu $y'' + y = 4\operatorname{ctgx}$ differensial tenglamani o‘zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani aniqlang.

✓ $\begin{cases} C_1'(x)\cos x + C_2'(x)\sin x = 0 \\ -C_1'(x)\sin x + C_2'(x)\cos x = 4\operatorname{ctgx} \end{cases}$

17. $y'' + y' = x$ tenglamaning umumiyligini yechimini toping

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

18. Tenglamani yeching: $x'' + x = 1$,
 $x(0) = -1, x'(0) = 0$.

✗ $x(t) = 1 + \cos t$.

19. $y'' - 7y' + 6y = 0$ tenglamaning umumiyligini yechimini toping.

✓ $y = C_1 e^{6x} + C_2 e^x$

20. $y'' - 4y' - 5y = x$ tenglamaning umumiyligini yechimini toping?

✓ $y = C_1 e^{-x} + C_2 e^{5x} - \frac{1}{5}x + \frac{4}{25}$

Imtihon 1-курс Дифференциал тенгламалар фанидан якуний назорат-MTH1224

Talaba ABDUJABBOROV SARDORXO'JA ASROL O'G'LII

Guruh 651-20 KTo`

Boshlandi 07.07.2021 12:14

Tugadi 07.07.2021 12:59

To'g'ri 10

Foiz 50.0

1. $y'' - 4y' + 3y = e^{3x}$ tenglamaning umumiyl yechimini toping

✗ $y = C_1 e^x + \left(C_2 - \frac{x}{2} \right) e^{3x}$

2. Differensial tenglamani xususiy yechimini toping:
 $y' \sin x - y \ln y = 0,$
 $y(\pi/2) = 1$

✗ $y = x + 1$

3. Agar noma'lum funksiya faqat bitta o'zgaruvchiga bog'liq bo'lsa, bunday differensial tenglamaga ... differensial tenglama deyiladi

✓ oddiy

4. $y'' - y' = \cos 2x$ tenglamaning umumiyl yechimini toping

$y = C_1 + C_2 e^x -$
 ✓ $-\frac{1}{5} \cos 2x - \frac{1}{10} \sin 2x$

5. Fundamental yechimlari sistemasi $y_1 = e^x \cos 3x, y_2 = e^x \sin 3x$ bo'lgan chiziqli bir jinsli differensial tenglama tuzing.

✓ $y'' - 2y' + 10y = 0$

6. $y'' - 4y' + 13y = 0$ tenglamaning fundamental yechimlari sistemasini toping

✓ $y_1 = e^{2x} \cos 3x,$
 $y_2 = e^{2x} \sin 3x$

7. Tenglamaning tipini aniqlang: $y' - \frac{y}{x} = x + 1$

✗ Bir jinsli differensial tenglama

8. Tenglamani yeching: $x' + x = e^t, x(0) = 0$

✗ $x(t) = te^t$

9. Ushbu $y' = \frac{x-2y-3}{x+y}$ tenglamani bir jinsliga keltirish uchun qanday almashtirish bajariladi?

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

10. Aslning tasvirini toping: $f(t) = e^{2t} \sin t$

✗ $F(p) = \frac{1}{(p-1)^2 + 1}$

11. Differensial tenglamani yeching: $y' - \frac{y}{x} = -\frac{12}{x^3}$

✗ $y = \frac{4}{x+C}$

12. Quyidagi tenglamalarni qaysi biri Bernulli tenglamasi hisoblanadi:

✗ $y' + Q(x)y^2 = F(x)y^\alpha$

13. Ushbu $y' + P(x)y = Q(x)y^n$ Bernulli tenglamasini chiziqli tenglamaga keltirish uchun qanday almashtirish qo'llanadi?

✓
$$\begin{aligned} z &= y^{-n+1}, \\ z' &= (-n+1) y^{-n} \cdot y' \end{aligned}$$

14. $y'' = \sin 2x$ tenglamaning umumiyligini yechimini toping

✓ $y = -\frac{1}{4} \sin 2x + C_1 x + C_2$

15. $y' = \frac{y^2}{x^2} - 2$ differensial tenglamani yeching.

✗ $y = 2x - Cx^3(y + 2x)$

16. Differensial tenglamada uning umumiyligini yechimidan ixtiyoriy o'zgarmasning hech bir qiymatida hosil qilish mumkin bo'lmasigan yechim nima deb ataladi?

✗ xususiy yechim

17. $y' = \frac{2xy}{x^2 - y^2}$ differensial tenglamani yeching

✗ $x^2 + y^2 = Cx$

18. Differensial tenglamani yeching: $y' = 3^{x-y}$

✓ $y = \log_3(C + 3^x)$

19. Differensial tenglamani yeching: $y' - \frac{2y}{x} = x^2 e^x$

✗ Javob belgilanmagan

20. $y'' + y' = x$ tenglananing umumiylarini yechimini toping

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

Imtihon 1-курс Дифференциал тенгламалар фанидан якуний назорат-MTH1224

Talaba SAMUG'JONOV ABDULAZIZ SHAVKAT O'G'LII

Guruh 651-20 KTo`

Boshlandi 07.07.2021 12:18

Tugadi 07.07.2021 13:00

To'g'ri 9

Foiz 45.0

1. Differensial tenglamani xususiy yechimini toping. $y' = 8\sqrt{y}$ $y(0) = 4$

✖ Javob belgilanmagan

2. Quyidagilarni qaysi biri chiziqli differnsial tenglamani yechishning almashtirishi hisoblanadi

✖ Javob belgilanmagan

3. Ushbu $y'' - 3y' + 2y = xe^{3x}$ differnsial tenglamani o'zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani aniqlang.

✖ Javob belgilanmagan

4. Ushbu $y'' + 2y' - 3y = xe^{3x}$ differnsial tenglamani o'zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani aniqlang.

✖ Javob belgilanmagan

5. $y'' - y = 0$ tenglamaning $y(0) = 0$, $y'(0) = 2$ boshlang'ich shartlarni qanoatlantiruvchi yechimini toping

✖ Javob belgilanmagan

6. Differensial tenglamani yeching. $y' + \frac{2y}{x} = x^3$

✖ Javob belgilanmagan

7. $y'' + 9y = 0$ tenglamaning $y(0) = 0$, $y'\left(\frac{\pi}{4}\right) = -3$, boshlang'ich shartlarni qanoatlantiruvchi yechimini toping

✓ $y = \sqrt{2} \sin 3x$

8. Tasvirning asl funksiyasi topilsin: $F(p) = \frac{p+1}{p^2 - 2p + 5}$

✗ *Javob belgilanmagan*

9. Tenglamaning tipini aniqlang: $y' - \frac{y}{x} = x + 1$

✓ Chiziqli differensial tenglama

10. Tenglamani umumiy yechimini toping $y' = 2x + y$

✗ *Javob belgilanmagan*

11. $y' = \frac{y}{x-y}$ differensial tenglamani yeching.

✗ *Javob belgilanmagan*

12. $y'' + y = 0$ tenglamaning $y\left(\frac{\pi}{2}\right) = 1, y'\left(\frac{\pi}{3}\right) = 0$ boshlang'ich shartlarni qanoatlantiruvchi yechimini toping

✗ *Javob belgilanmagan*

13. $y'' + 3y' = e^{-3x}$ tenglamaning umumiy yechimini toping

✗ *Javob belgilanmagan*

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

✓ birinchi tartibli

15. Bir jinsl differensial tenglamaga keltiriladigan differensial tenglamaning umumiyo ko‘rinishini toping

✗ Javob belgilanmagan

16. Fundamental yechimlari sistemasi $y_1 = e^x \cos 3x$, $y_2 = e^x \sin 3x$ bo‘lgan chiziqli bir jinsli differensial tenglama tuzing.

✗ Javob belgilanmagan

17. $y' = \frac{y^2}{x^2} - 2$ differensial tenglamani yeching.

✗ Javob belgilanmagan

18. Bir jinsli differensial tenglama uchun Koshi masalasi aniqlang

✗ Javob belgilanmagan

19. Differensial tenglamalar sistemasini noma’lumlarni yo‘qotish usulida yeching:

$$\begin{cases} y' = 2y + z \\ z' = 3y \end{cases}$$

✗ Javob belgilanmagan

20. $y'' - 4y' + 4y = 0$ tenglamaning umumiyo yechimini toping

✗ Javob belgilanmagan

Imtihon	1-курс Дифференциал тенгламалар фанидан якуний назорат-МТН1224
Talaba	JA'FAROVA RUHSORA ZAFAR QIZI
Guruh	651-20 KTo`
Boshlandi	07.07.2021 12:10
Tugadi	07.07.2021 13:00
To'g'ri	3
Foiz	15.0

1. Quyidagilarni qaysi biri bir jinsli differnsial tenglamaga keltiriladigan tenglama?

✓ $y' = \frac{x+2y-3}{x-y}$

2. Tenglananing umumi yechimini toping $y' = xy$

✗ $y = e^{x^2} + C$

3. Tenglamani yeching: $x' + x = e^t$, $x(0) = 0$

✗ Yechimga ega emas

4. Klero tenglamasini aniqlang

✓ $y = xy' + \psi(y')$

5. $y'''' + y'''(x-1) - y'' = 0$ tenglama tartibini pasaytirganda hosil bo'lgan tenglananing tartibini aniqlang

✗ 4

6. Quyidagilardan qaysi biri birinchi tartibli differential tenglama uchun Koshi masalasi bo'ladi?

✓ $\begin{cases} y' = f(x, y) \\ y(x_0) = y_0 \end{cases}$

7. $y'' - 4y' + 3y = e^{3x}$ tenglamaning umumiyligini toping

✗ $y = C_1 e^x + \left(C_2 - \frac{x}{3} \right) e^{3x}$

8. $9y'' + y = 0$ tenglamaning $y\left(\frac{3\pi}{2}\right) = 2$, $y'\left(\frac{3\pi}{2}\right) = 0$, boshlang'ich shartlarni qanoatlantiruvchi yechimini toping

✓ $y = 2 \sin \frac{x}{3}$

9. $y'' + 4y' = 2$ tenglamining umumiyligini toping

✓ $y = C_1 + C_2 e^{-4x} + \frac{x}{2}$

10. Quyidagi tenglamalarning qaysi biri o'zgaruvchilari ajraladigan tenglama?

✓ $(1+x^2)dy + ydx = 0$

11. $y'' - 4y' + 13y = 0$ tenglamining fundamental yechimlari sistemasini toping

✓ $y_1 = e^{2x} \cos 3x,$
 $y_2 = e^{2x} \sin 3x$

12. $y'' - 5y = \sin 5x$ tenglamining umumiyligini toping

$$y = C_1 e^{-\sqrt{5}x} + C_2 e^{\sqrt{5}x} -$$

✓ $-\frac{1}{30} \sin 5x$

13. $y'' + 9y = 0$ tenglamaning $y(0) = 0$, $y'\left(\frac{\pi}{4}\right) = -3$, boshlang'ich shartlarni qanoatlantiruvchi yechimini toping

✓ $y = \sqrt{2} \sin 3x$

14. Ushbu $y' + \frac{y}{3} = \frac{x+1}{3y^3}$ tenglamani qanday almashtirish yordamida chiziqli tenglamaga olib kelinadi?

✓ $z = y^4$,
 $z' = 4y^3 \cdot y'$

15. $y'' - 7y' + 6y = 0$ tenglamaning umumiy yechimini toping.

✗ $y = C_1 e^{-6x} + C_2 e^{-x}$

16. Tenglamani yeching: $x'' + 3x' = e^t$,
 $x(0) = 0, x'(0) = -1$.

✗ Javob belgilanmagan

17. Ushbu $y'' + py' + qy = f(x)$ differensial tenglamani o'zgarmasni variatsiyalash usulida yechishda $C_1(x)$ va $C_2(x)$ funksiyalarini aniqlovchi tenglamalar sistemasini tuzing.

✖ Javob belgilanmagan

18. Fundamental yechimlari sistemasi $y_1 = e^x \cos 3x$, $y_2 = e^x \sin 3x$ bo‘lgan chiziqli bir jinsli differensial tenglama tuzing.

✖ Javob belgilanmagan

19. $y'' = e^{-x}$ tenglamaning $y(0) = 1$, $y'(0) = 0$ shartni qanoatlantiruvchi yechimini toping

✖ Javob belgilanmagan

20. $y' = \frac{a_1x + b_1y + c_1}{a_2x + b_2y + c_2}$ tenglama qachon o‘zgaruvchilari ajraladigan differensial tenglamaga keladi?

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

Imtihon 1-курс Дифференциал тенгламалар фанидан якуний назорат-МТН1224

Talaba SHAMSIYEVA ZAYNAB TO‘LAMUROD QIZI

Guruh 651-20 KTo`

Boshlandi 07.07.2021 12:01

Tugadi 07.07.2021 12:46

To‘g’ri 10

Foiz 50.0

1. $y'' + 4y' = 2$ tenglamanyning umumi yechimini toping

✓ $y = C_1 + C_2 e^{-4x} + \frac{x}{2}$

2. Differensial tenglamani yeching. $y' + \frac{2y}{x} = x^3$

✓ $y = \frac{x^4}{6} + \frac{C}{x^2}$

3. Differensial tenglamani xususiy yechimini toping $2\sqrt{y}dx - dy = 0, y(0) = 1$

✓ $y = (x + 1)^2$

4. Tenglamani yeching $\frac{ds}{dt} = \frac{s}{t} - \frac{t}{s}$

✗ $s = 2t^2 \ln \left| \frac{C}{t} \right|$

5. Laplas almashtirishini aniqlang:

✓ $F(p) \doteq \int_p^\infty e^{-pt} f(t) dt$

6. Ushbu $y' + \frac{y}{3} = \frac{x+1}{3y^3}$ tenglamani qanday almashtirish yordamida yechish mumkin?

✗
$$\begin{aligned} z &= y^{-3}, \\ z' &= -y^{-4} \cdot y' \end{aligned}$$

7. $\frac{y}{y'} = \ln y$ differensial tenglamaning tipini aniqlang

✗ Chiziqli

8. Chiziqli differensial tenglamani qaysi usulda yechiladi?

✓ Bernulli

9. Quyida shartlardan qaysi biri bajarilsa $y' = f(x, y)$ tenglama nolinchi tartibli bir jinsli differensial tenglama bo'ladi?

✓ $f(\lambda x, \lambda y) = f(x, y)$

10. Differensial tenglamani xususiy yechimini toping. $y' = 8\sqrt{y}$ $y(0) = 4$

✓ $y = (4x + 2)^2$

11. Ushbu $y'' - 3y' + 2y = xe^{3x}$ differensial tenglamani o'zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani aniqlang.

✗
$$\begin{cases} C_1'(x)e^x + C_2'(x)e^{-3x} = 0 \\ C_1'(x)e^x + 3C_2'(x)e^{-3x} = xe^{3x} \end{cases}$$

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

✗ $y = e^{-x} + \frac{x^3}{2} + C_1x + C_2$

13. Quyidagilarning qaysi biri 1-tartibli chiziqli differensial tenglamaning umumiy ko‘rinishi?

✓ $y' + p(x) \cdot y + q(x) = 0$

14. 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

15. $y'' - y' - 2y = 0$ tenglamaning xarakteristik tenglamasi va umumiy yechimi to‘g‘ri ko‘rsatilgan qatorni aniqlang

✓ $k^2 - k - 2 = 0,$
 $y = C_1e^{-x} + C_2e^{2x}$

16. Noma'lumlarni yo‘qotish usulida Koshi masalasini yeching:

$$\begin{cases} x' = -y + 2 \\ y' = x + 1 \end{cases} \quad x(0) = -1, y(0) = 0.$$

✓ $\begin{cases} x(t) = 2 \sin t - 1 \\ y(t) = -2 \cos t + 2 \end{cases}$

17. $y'' - y = 0$ tenglamaning $y(0) = 0, y'(0) = 2$ boshlang‘ich shartlarni qanoatlantiruvchi yechimini toping

✓ $y = e^x - e^{-x}$

18. Tasvirning asl funksiyasi topilsin: $F(p) = \frac{e^{-2p}}{p^2 - 9}$

✗ $f(t) = \frac{1}{3}ch(3t - 2)$.

19. Tenglamani yeching:
 $x'' + 2x' + x = \sin t,$
 $x(0) = 0, x'(0) = -1$

✓ $x(t) = \frac{1}{2}(e^{-t} - t e^{-t} - \cos t).$

20. $y' = \frac{y}{x-y}$ differensial tenglamani yeching.

✗ $\ln y - \frac{x}{y} = C$

Imtihon 1-курс Дифференциал тенгламалар фанидан якуний назорат-МТН1224

Talaba JALOLOV JAVOHIR JAVLON O'G'LII

Guruh 651-20 KTo`

Boshlandi 07.07.2021 12:09

Tugadi 07.07.2021 12:53

To'g'ri 13

Foiz 65.0

1. Differensial tenglamalar sistemasini noma'lumlarni yo'qotish usulida yeching:

$$\begin{cases} x' = 3y, & x(0) = 0 \\ y' = 3x, & y(0) = 1 \end{cases}$$

✓ $\begin{cases} x(t) = sh3t \\ y(t) = ch3t \end{cases}$

2. $y'' + 5y' + 6y = 0$ tenglamaning $y(0) = 1$, $y'(0) = -6$, boshlang'ich shartlarni qanoatlantiruvchi yechimini toping

✓ $y = 4e^{-3x} - 3e^{-2x}$

3. Ushbu sistema $\begin{cases} C'_1(x) + C'_2(x)e^{-2x} = 0 \\ -2C'_2(x)e^{-2x} = 3shx \end{cases}$ qaysi differensial tenglamani o'zgarmasni variatsiyalash usulida yechish uchun tuzilgan?

✓ $y'' + 2y' = 3shx$

4. $y'' + 4y' = 2$ tenglamaning umumiyl yechimini toping

✓ $y = C_1 + C_2 e^{-4x} + \frac{x}{2}$

5. Aslning tasvirini toping: $f(t) = t$

✓ $F(p) = \frac{1}{p^2}$

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

✓ $y = C_1 + C_2 e^x + C_3 x e^x$

7. $y'' - 16y = x - 1$ tenglamaning umumiy yechimini toping

✗ Javob belgilanmagan

8. Qaysi bir formula noto'g'ri?

✓ $t \cdot f(t) \leftarrow pF(p)$

9. Tenglamaning tipini aniqlang: $y' - \frac{y}{x} = x + 1$

✗ Bir jinsli differensial tenglama

10. Differensial tenglamani xususiy yechimini toping. $y' = 8\sqrt{y}$ $y(0) = 4$

✓ $y = (4x + 2)^2$

11. Ushbu $y' + \frac{y}{3} = \frac{x+1}{3y^3}$ tenglamani qanday almashtirish yordamida yechish mumkin?

✗
$$\begin{aligned} z &= y^{-3}, \\ z' &= -3y^{-4} \cdot y' \end{aligned}$$

12. Tenglamani yeching: $x'' = 1, x(0) = 0, x'(0) = 1$.

✓ $x(t) = t + \frac{1}{2}t^2$.

13. Quyidagi tenglama uchun integralovchi ko‘paytuvchi qanday bo‘ladi:

$$(1 - yx)dx + x(y - x)dy = 0 ?$$

✓ $\mu(x) = \frac{1}{x}$

14. Tenglamani yeching: $x'' - 2x' + 2x = 1,$
 $x(0) = x'(0) = 0.$

✓ $x(t) = \frac{1}{2}(1 - e^t \cos t + e^t \sin t).$

15. Differensial tenglamalar sistemasini noma'lumlarni yo'qotish usulida yeching:

$$\begin{cases} y' = 2y + z \\ z' = 3y + 4e^x \end{cases}$$

✓ $\begin{cases} y(x) = C_1 e^{-x} + C_2 e^{3x} - e^x \\ z(x) = -3C_1 e^{-x} + C_2 e^{3x} + e^x \end{cases}$

16. Quyidagilarning qaysi biri 1-tartibli chiziqli differensial tenglama?

✓ $y' + x^3 y + 3x^2 = 0$

17. Ushbu $y'' - 2y' + y = \frac{e^x}{x}$ differensial tenglamani o'zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani aniqlang.

✓
$$\begin{cases} C_1'(x)e^x + C_2'(x)xe^x = 0 \\ C_1'(x)e^x + C_2'(x)(1+x)e^x = \frac{e^x}{x} \end{cases}$$

18. Quyidagilarni qaysi biri bir jinsli differnsial tenglamaga keltiriladigan tenglama?

✗ $y' = \frac{y}{x^2 + 1}$

19. Rikkati tenglamasini aniqlang

✗ $y'' = y^2 + 2y' + 1$

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

✓ $y = C_1 e^x + \left(C_2 - \frac{x}{2} \right) e^{-x}$

Imtihon 1-курс Дифференциал тенгламалар фанидан якуний назорат-МТН1224

Talaba BAXRIDDINOVA MUNISA FARXOD QIZI

Guruh 651-20 KTo`

Boshlandi 07.07.2021 12:19

Tugadi 07.07.2021 13:00

To'g'ri 15

Foiz

75.0

1. $y'' - 4y' + 3y = e^{3x}$ tenglamaning umumiyl yechimini toping

✗ $y = C_1 e^x + \left(C_2 - \frac{x}{2} \right) e^{3x}$

2. Differensial tenglamani xususiy yechimini toping:
 $y' \sin x - y \ln y = 0,$
 $y(\pi/2) = 1$

✗ $y = x + 1$

3. Agar noma'lum funksiya faqat bitta o'zgaruvchiga bog'liq bo'lsa, bunday differensial tenglamaga ... differensial tenglama deyiladi

✓ oddiy

4. $y'' - y' = \cos 2x$ tenglamaning umumiyl yechimini toping

$y = C_1 + C_2 e^x -$
 ✓ $-\frac{1}{5} \cos 2x - \frac{1}{10} \sin 2x$

5. Fundamental yechimlari sistemasi $y_1 = e^x \cos 3x, y_2 = e^x \sin 3x$ bo'lgan chiziqli bir jinsli differensial tenglama tuzing.

✓ $y'' - 2y' + 10y = 0$

6. $y'' - 4y' + 13y = 0$ tenglamaning fundamental yechimlari sistemasini toping

✓ $y_1 = e^{2x} \cos 3x,$
 $y_2 = e^{2x} \sin 3x$

7. Tenglamaning tipini aniqlang: $y' - \frac{y}{x} = x + 1$

✗ Bir jinsli differensial tenglama

8. Tenglamani yeching: $x' + x = e^t, x(0) = 0$

✗ $x(t) = te^t$

9. Ushbu $y' = \frac{x-2y-3}{x+y}$ tenglamani bir jinsliga keltirish uchun qanday almashtirish bajariladi?

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

10. Aslning tasvirini toping: $f(t) = e^{2t} \sin t$

✗ $F(p) = \frac{1}{(p-1)^2 + 1}$

11. Differensial tenglamani yeching: $y' - \frac{y}{x} = -\frac{12}{x^3}$

✗ $y = \frac{4}{x+C}$

12. Quyidagi tenglamalarni qaysi biri Bernulli tenglamasi hisoblanadi:

✗ $y' + Q(x)y^2 = F(x)y^\alpha$

13. Ushbu $y' + P(x)y = Q(x)y^n$ Bernulli tenglamasini chiziqli tenglamaga keltirish uchun qanday almashtirish qo'llanadi?

✓
$$\begin{aligned} z &= y^{-n+1}, \\ z' &= (-n+1) y^{-n} \cdot y' \end{aligned}$$

14. $y'' = \sin 2x$ tenglamaning umumiyligini yechimini toping

✓ $y = -\frac{1}{4} \sin 2x + C_1 x + C_2$

15. $y' = \frac{y^2}{x^2} - 2$ differensial tenglamani yeching.

✗ $y = 2x - Cx^3(y + 2x)$

16. Differensial tenglamada uning umumiyligini yechimidan ixtiyoriy o'zgarmasning hech bir qiymatida hosil qilish mumkin bo'lmasigan yechim nima deb ataladi?

✗ xususiy yechim

17. $y' = \frac{2xy}{x^2 - y^2}$ differensial tenglamani yeching

✗ $x^2 + y^2 = Cx$

18. Differensial tenglamani yeching: $y' = 3^{x-y}$

✓ $y = \log_3(C + 3^x)$

19. Differensial tenglamani yeching: $y' - \frac{2y}{x} = x^2 e^x$

✗ Javob belgilanmagan

20. $y'' + y' = x$ tenglananing umumiylarini yechimini toping

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

Imtihon 1-курс Дифференциал тенгламалар фанидан якуний назорат-MTH1224

Talaba SAMUG'JONOV ABDULAZIZ SHAVKAT O'G'LII

Guruh 651-20 KTo`

Boshlandi 07.07.2021 12:18

Tugadi 07.07.2021 13:00

To'g'ri 9

Foiz 45.0

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

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

2. $y' + P(x)y = Q(x)$ tenglamani yechishning Lagranj usulida umumiy yechim ... ko'rinishda izlanadi

✗ $y = C(x)e^{\int P(x)dx}$

3. $xy'' = y' \ln \frac{y'}{x}$ tenglama tartibini pasaytirishdan hosil qilingan tenglamani ko'rsating

✓ $p' = \frac{p}{x} \ln \frac{p}{x}$

4. Qaysi bir formula noto'g'ri?

✓ $t \cdot f(t) \leftarrow \dot{p}F(p)$

5. Noma'lumlarni yo'qotish usulida Koshi masalasini yeching:

$$\begin{cases} x' = -y + 2 \\ y' = x + 1, \end{cases} \quad x(0) = -1, y(0) = 0.$$

✓ $\begin{cases} x(t) = 2 \sin t - 1 \\ y(t) = -2 \cos t + 2 \end{cases}$

6. Rikkati tenglamasini aniqlang

✓ $y' = a(x)y^2 + b(x)y + c(x)$

7. Ushbu sistema $\begin{cases} C_1'(x) + C_2'(x)e^{-2x} = 0 \\ -2C_2'(x)e^{-2x} = 3\sin x \end{cases}$ qaysi differensial tenglamani o'zgarmasni

variatsiyalash usulida yechish uchun tuzilgan?

✗ *Javob belgilanmagan*

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

✓ $y = C_1 + C_2 e^x + C_3 x e^x$

9. Aslning tasvirini toping: $f(t) = \cos \omega t$

✓ $F(p) = \frac{p}{p^2 + \omega^2}$

10. Tenglamaning umumiy yechimini toping $y' = xy$

✓ $y = Ce^{\frac{x^2}{2}}$

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

✓ $y = -x \ln \ln \frac{C}{x}$

12. Quyidagilardan qaysi biri birinchi tartibli differensial tenglama uchun Koshi masalasi bo‘ladi?

✓
$$\begin{cases} y' = f(x, y) \\ y(x_0) = y_0 \end{cases}$$

13. Qaysi almashtirish ushbu $y' = \frac{1-3x-3y}{1+x+y}$ tenglamani o‘zgaruvchilari ajraladigan tenglamaga keltiradi?

✗ *Javob belgilanmagan*

14. $y'' - 4y = -\frac{3}{5}e^{-x}$ tenglananining umumi yechimini toping

✓ $y = C_1 e^{-2x} + C_2 e^{2x} + \frac{1}{5}e^{-x}$

15. Differensial tenglamalar sistemasini noma'lumlarni yo'qotish usulida yeching:

$$\begin{cases} y' = 2y + z \\ z' = 3y \end{cases}$$

✗
$$\begin{cases} y(x) = C_1 e^x + C_2 e^{-3x} \\ z(x) = 3C_1 e^x - C_2 e^{-3x} \end{cases}$$

16. Quyidagi tenglamalarni qaysi biri Bernulli tenglamasi hisoblanadi:

✓ $y' + P(x)y = Q(x)y^\alpha$

17. Differensial tenglamalar sistemasini noma'lumlarni yo'qotish usulida yeching:

$$\begin{cases} y' = 2y + z \\ z' = 3y + 4e^x \end{cases}$$

✗ Javob belgilanmagan

18. 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

19. Bir jinsli differensial tenglama uchun Koshi masalasi aniqlang

✗ Javob belgilanmagan

20. Quyidagilarni qaysi biri bir jinsli differensial tenglamaning ko'rinishini ifodalash

✗ $y' = \varphi(y)$

Imtihon 1-курс Дифференциал тенгламалар фанидан якуний назорат-МТН1224

Talaba SAYNABIYEVA ZULAYHO NARZI QIZI

Guruhi 651-20 KTo`

Boshlandi 07.07.2021 12:32

Tugadi 07.07.2021 13:00

To'g'ri 13

Foiz 65.0

1. Chiziqli differensial tenglamani qaysi usulda yechiladi?

✓ Bernulli

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

✗ $y = \ln \frac{C}{x}$

3. $y'' - 4y' + 4y = 0$ tenglananing umumiyl yechimini toping

✓ $y = C_1 e^{2x} + C_2 x e^{2x}$

4. Tenglamani yeching: $x'' + x = 0, x(0) = 1, x'(0) = 0.$

✗ Yechimga ega emas

5. $y'' - 2y' = x^2 - x$ tenglananing umumiyl yechimini toping

✓ $y = C_1 + C_2 e^{2x} - \frac{x^3}{6}$

6. $y'' - 10y' + 25y = 0$ tenglananing $y(0) = 0, y'(0) = 1$, boshlang'ich shartlarni qanoatlantiruvchi yechimini toping

✗ $y = C x e^{5x}$

7. Ushbu $y' = \frac{x+2y-3}{x-1}$ tenglamani bir jinsliga keltirish uchun qanday almashtirish bajariladi?

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

8. Aslning tasvirini toping: $f(t) = 2 \sin t - \cos t$

✓ $F(p) = \frac{2-p}{p^2 + 1}$

9. Tasvirning asl funksiyasi topilsin: $F(p) = \frac{p}{(p^2 - 1)^2}$

✓ $f(t) = \frac{1}{2}t \cdot \sin t$

10. Ushbu $y' = \frac{x-2y-3}{x+y}$ tenglamani bir jinsliga keltirish uchun qanday almashtirish bajariladi?

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

11. Tasvirning asl funksiyasi topilsin: $F(p) = \frac{e^{-2p}}{p^2}$

✓ $f(t) = (t-2)\eta(t-2)$

12. Quyidagi tenglama uchun integralovchi ko‘paytuvchi qanday bo‘ladi:

$$(1-yx)dx + x(y-x)dy = 0 ?$$

✗ $\mu(x) = \frac{1}{x^2}$

13. $y'' + 2y' - 3y = e^{2x}$ tenglamaning umumiy yechimini toping

✗ $y = C_1 e^{-3x} + C_2 e^x - \frac{1}{5} e^{2x}$

14. Aslning tasvirini toping: $f(t) = \sin 4t$

✓ $F(p) = \frac{4}{p^2 + 16}$

15. Ushbu $4y' + y = 0$ tenglamaning umumiy yechimini toping?

✓ $y = Ce^{-\frac{x}{4}}$

16. Tenglamani yeching: $x'' - 4x' + 3x = 3,$
 $x(0) = 0, x'(0) = 1$

✓ $x(t) = 1 - 2e^t + e^{3t}$

17. Agar noma'lum funksiya faqat bitta o'zgaruvchiga bog'liq bo'lsa, bunday differensial tenglamaga ... differensial tenglama deyiladi

✓ oddiy

18. Differensial tenglamani yeching: $y' - \frac{y}{x} = -\frac{12}{x^3}$

✓ $y = \frac{4}{x^2} + Cx$

19. Aslning tasvirini toping: $f(t) = te^{ta}$

✓ $F(p) = \frac{1}{(p-a)^2}$

20. Differensial tenglamani yeching: $y' - \frac{2y}{x} = x^2 e^x$

✓ $y = x^2(e^x + C)$

Imtihon 1-курс Дифференциал тенгламалар фанидан якуний назорат-МТН1224

Talaba QURBONALIYEV LAZIZBEK NIZAMIDDIN O'G'LII

Guruh 651-20 KTo`

Boshlandi 07.07.2021 11:00

Tugadi 07.07.2021 11:45

To'g'ri 14

Foiz 70.0

1. $y' + P(x)y = Q(x)$ tenglamani yechishning Bernulli usulida umumiy yechim ... ko'rinishda izlanadi

✓ $y = uv$

2. Ushbu $y' + P(x)y = Q(x)y^n$ Bernulli tenglamasini chiziqli tenglamaga keltirish uchun qanday almashtirish qo'llanadi?

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

3. Erkli o'zgaruvchi, noma'lum funksiya va uning hosilalari yoki differensiallarini bog'lovchi tenglamaga ... deyiladi.

✗ umumiy yechim

4. Tenglamani yeching: $x'' + x = 1$,
 $x(0) = -1, x'(0) = 0$.

✓ $x(t) = 1 - 2 \cos t$.

5. Chiziqli differensial tenglamani yeching: $y' + \frac{2y}{x} = \frac{e^{-x^2}}{x}$

✓ $y = \frac{C - e^{-x^2}}{2x^2}$

6. Noma'lumlarni yo'qotish usulida Koshi masalasini yeching:

$$\begin{cases} x' = -y + 2 \\ y' = x + 1, \end{cases} \quad x(0) = -1, y(0) = 0.$$

✗ $\begin{cases} x(t) = -2 \sin t - 1 \\ y(t) = 2 \cos t - 2 \end{cases}$

7. Tenglamaning tipini aniqlang: $y' = f_1(x)f_2(y)$

✓ O'zgaruvchilari ajraladigan

8. Ushbu $y' = \frac{x-2y-3}{x+y}$ tenglamani bir jinsliga keltirish uchun qanday almashtirish bajariladi?

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

9. $1 + y'^2 = y y''$ tenglamada qanday almashtirish bajariladi?

✗ $p = y', p' = y''$

10. Quyidagilarni qaysi biri bir jinsli differnsial tenglamaga keltiriladigan tenglama?

✓ $y' = \frac{x+2y-3}{x-y}$

11. Tenglamaning umumiy yechimini toping $y' = xy$

✗ $y = e^{x^2} + C$

12. Aslning tasvirini toping: $f(t) = t + 2e^t$

✓ $F(p) = \frac{2p^2 + p - 1}{p^2(p - 1)}$

13. Aslning tasvirini toping: $f(t) = t$

✓ $F(p) = \frac{1}{p^2}$

14. Chiziqli differensial tenglamani yeching: $y' - \frac{3y}{x} = x$

✗ $y = x^3 + Cx^2$

15. Tasvirning asl funksiyasi topilsin: $F(p) = \frac{1}{p^2(p^2 + 1)}$

✓ $f(t) = t - \sin t$

16. Tasvirning asl funksiyasi topilsin: $F(p) = \frac{e^{-3p}}{p+2}$

✗ $f(t) = e^{t-2}\eta(t-2)$

17. Tasvirning asl funksiyasi topilsin: $F(p) = \frac{p+1}{p^2 - 2p + 5}$

✓ $f(t) = e^t (\cos 2t + \sin 2t)$

18. Ushbu $y' = \frac{x+2y-3}{x-1}$ tenglamani bir jinsliga keltirish uchun qanday almashtirish bajariladi?

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

19. $y'' + 5y' + 6y = 0$ tenglamaning $y(0) = 1$, $y'(0) = -6$, boshlang'ich shartlarni qanoatlantiruvchi yechimini toping

✓ $y = 4e^{-3x} - 3e^{-2x}$

20. Tenglamani yeching: $x'' = 1$, $x(0) = 0$, $x'(0) = 1$.

✓ $x(t) = t + \frac{1}{2}t^2$.

Imtihon 1-курс Дифференциал тенгламалар фанидан якуний назорат-МТН1224

Talaba BOYNAZAROVA MUXLISA QAMBAR QIZI

Guruh 651-20 KTo`

Boshlandi 07.07.2021 11:41

Tugadi 07.07.2021 12:26

To'g'ri 11

Foiz 55.0

1. $y'' + 3y' = e^{-3x}$ tenglamaning umumiy yechimini toping

✓ $y = C_1 + \left(C_2 - \frac{x}{3} \right) e^{-3x}$

2. Tasvirning asl funksiyasi topilsin: $F(p) = \frac{e^{-2p}}{p^2}$

✗ $f(t) = (t+2)\eta(t+2)$

3. $y'' - 4y' + 13y = 0$ tenglamaning umumiy yechimini toping

✓ $y = e^{2x} (C_1 \cos 3x + C_2 \sin 3x)$

4. Differensial tenglamalar sistemasini noma'lumlarni yo'qotish usulida yeching:

$$\begin{cases} x' = 3y, & x(0) = 0 \\ y' = 3x, & y(0) = 1 \end{cases}$$

✓ $\begin{cases} x(t) = sh 3t \\ y(t) = ch 3t \end{cases}$

5. Quyidagilardan qaysi biri to'la differensial tenglama bo'la olmaydi?

✗ $e^y dx + (xe^y - 2y) dy = 0.$

6. Ushbu $4y' + y = 0$ tenglamaning umumiy yechimini toping?

✗ $y = e^x(C + x^2)$

7. Differensial tenglamani to‘g‘ri tenglikka aylantiruvchi $y = \varphi(x, C)$ funksiyaga tenglamaning deyiladi.

✓ umumiy yechimi

8. Differensial tenglamani yeching: $y' - \frac{y}{x} = -\frac{12}{x^3}$

✗ $y = \frac{4}{x + C}$

9. $y'' + 2y' - 3y = e^{2x}$ tenglamaning umumiy yechimini toping

✗ $y = C_1 e^{3x} + C_2 e^{-x} + \frac{1}{5} e^{2x}$

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

✗ $y' = \frac{a_1 x + b_1 y_1}{a_2 x + b_2 y + c_2}$

11. Ushbu $y'' - 2y' + y = \frac{e^x}{x}$ differensial tenglamani o‘zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani aniqlang.

✗
$$\begin{cases} C'_1(x)e^x + C'_2(x)e^{-x} = 0 \\ C'_1(x)xe^x - C'_2(x)e^{-x} = \frac{e^x}{x} \end{cases}$$

12. Ushbu sistema
$$\begin{cases} C'_1(x)e^x + C'_2(x)e^{2x} = 0 \\ C'_1(x)e^x + 2C'_2(x)e^{2x} = xe^{3x} \end{cases}$$
 qaysi differensial tenglamani o'zgarmasni variatsiyalash usulida yechish uchun tuzilgan?

✓ $y'' - 3y' + 2y = xe^{3x}$

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

✗ yuqori tartibli

14. Tenglamani yeching: $x'' - 2x' + 2x = 1,$
 $x(0) = x'(0) = 0.$

✗ $x(t) = \frac{1}{2}(1 - e^t \cos t).$

15. Tenglamani yeching: $x'' + x' = 1, x(0) = 0, x'(0) = 1$

✗ $x(t) = -t.$

16. Fundamental yechimlari sistemasi $y_1 = e^{-2x}, y_2 = e^{-3x}$ bo'lgan chiziqli bir jinsli differensial tenglama tuzing.

✗ $y'' - 5y' + 6y = 0$

17. Chiziqli differensial tenglamani yeching: $y' - \frac{3y}{x} = x$

✓ $y = Cx^3 - x^2$

18. Tenglamani yeching: $x' + x = e^{-t}$, $x(0) = 1$.

✗ $x(t) = (t+1)e^t$.

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

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

20. Tenglananining tipini aniqlang: $xy' + y = x \ln x$.

✗ Bernulli tenglamasi

Imtihon 1-курс Дифференциал тенгламалар фанидан якуний назорат-MTH1224

Talaba ISMOILOV BURHONIDDIN SALOHIDDIN O'G'LII

Guruh 651-20 KTo`

Boshlandi 07.07.2021 11:52

Tugadi 07.07.2021 12:37

To'g'ri 6

Foiz 30.0

1. Differensial tenglamani yeching:

$$\begin{aligned}y' - 2xy &= -2x \\y(0) &= 3\end{aligned}$$

✗ $y = e^x$

2. 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.

✓ $\begin{cases} C'_1 y_1 + C'_2 y_2 = 0 \\ C'_1 y'_1 + C'_2 y'_2 = f(x) \end{cases}$

3. Quyidagilarning qaysi biri 1-tartibli chiziqli differensial tenglamaning umumiy ko‘rinishi?

✓ $y' + p(x) \cdot y + q(x) = 0$

4. Differensial tenglamani to‘g‘ri tenglikka aylantiruvchi $y = \varphi(x, C)$ funksiyaga tenglamaning deyiladi.

✓ umumiy yechimi

5. Tasvirning asl funksiyasi topilsin: $F(p) = \frac{p}{(p^2 - 1)^2}$

✓ $f(t) = \frac{1}{2}t \cdot \sin t$

6. Aslning tasvirini toping: $f(t) = t$

✓ $F(p) = \frac{1}{p^2}$

7. Tenglamani yeching: $x'' + x = 0, x(0) = 1, x'(0) = 0$.

✓ $x(t) = \text{cost.}$

8. Tenglananining umumi yechimini toping $y' = xy$

✗ $y = e^{Cx^2}$

9. $y' + P(x)y = Q(x)$ tenglamani yechishning Bernulli usulida umumi yechim ... ko'rinishda izlanadi

✗ $y = pp'$

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

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

11. $y'' - 5y = \sin 5x$ tenglananining umumi yechimini toping

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

$\times \quad + \frac{1}{30} \sin 5x$

12. Ushbu sistema qaysi differensial tenglamani o'zgarmasni variatsiyalash usulida yechish uchun tuzilgan?

$\checkmark \quad y'' - 2y' + y = \frac{e^x}{x}$

13. $y'' + y = 3 \sin x$ tenglamaning umumiyligini yechimini toping

$\times \quad y = C_1 \cos x + C_2 \sin x +$

$+ 1,5x \cos x$

14. Noma'lumlarni yo'qotish usulida Koshi masalasini yeching:

$$\begin{cases} x' = -y + 2 \\ y' = x + 1, \end{cases} \quad x(0) = -1, \quad y(0) = 0.$$

$\times \quad \begin{cases} x(t) = 2 \sin t - 1 \\ y(t) = 2 \cos t - 2 \end{cases}$

15. $y'' = xe^{-x}$ tenglamaning umumiyligini yechimini toping

$\checkmark \quad y = (x + 2)e^{-x} + C_1 x + C_2$

16. Quyidagilardan qaysi biri o'ng tomoni maxsus ko'rinishda bo'lgan differensial tenglama bo'la olmaydi va u o'zgarmasni variatsiyalash usulida yechiladi?

✗ $y'' + 9y = 3sh3x$

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

✓ $Q(x) \equiv 0$

18. Aslning tasvirini toping: $f(t) = sh3t$

✗ $F(p) = \frac{3}{p^2 + 9}$

19. $y''' - 5y'' + 4y = 0$ tenglamaning xarakteristik tenglamasi ildizlarini toping

✓ $k_1 = -1, k_2 = 1,$
 $k_3 = -2, k_4 = 2$

20. Tasvirning asl funksiyasi topilsin: $F(p) = \frac{e^{-3p}}{p+2}$

✓ $f(t) = e^{-2(t-3)}\eta(t-3)$

Imtihon 1-курс Дифференциал тенгламалар фанидан якуний назорат-МТН1224

Talaba FAYZULLAYEV SAYFIDDIN BAHODIR O'G'LII

Guruh 651-20 KTo`

Boshlandi 07.07.2021 12:15

Tugadi 07.07.2021 13:00

To'g'ri 12

Foiz 60.0

1. Ushbu $y' + P(x)y = Q(x)y^n$ ko'rinishdagi tenglama qanday nomlanadi?

✓ Bernulli tenglamasi

2. Differensial tenglamalar sistemasini noma'lumlarni yo'qotish usulida yeching:

$$\begin{cases} y' = z - 2y \\ z' = 3y \end{cases}$$

✓ $\begin{cases} y(x) = C_1 e^x + C_2 e^{-3x} \\ z(x) = 3C_1 e^x - C_2 e^{-3x} \end{cases}$

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

✓ $p = y', p' = y''$

4. Tenglamaning tipini aniqlang: $xy' + y = x \ln x$.

✓ Chiziqli differensial tenglama

5. Ushbu $y' + \frac{y}{3} = \frac{x+1}{3y^3}$ tenglamani qanday almashtirish yordamida yechish mumkin?

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

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

✓ $Q(x) \equiv 0$

7. Tenglamani yeching: $\begin{aligned} x'' + 2x' + x &= t, \\ x(0) &= 0, x'(0) = 0. \end{aligned}$

✓ $x(t) = 2e^{-t} + te^t + t - 2.$

8. Ushbu $y'' + 2y' - 3y = xe^{3x}$ differensial tenglamani o'zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani aniqlang.

✗ $\begin{cases} C_1'(x)e^x + C_2'(x)e^{-3x} = 0 \\ C_1'(x)e^x + 3C_2'(x)e^{-3x} = xe^{3x} \end{cases}$

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

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

10. $y' + P(x)y = Q(x)$ tenglamanini yechishning Bernulli usulida umumiyl yechim ... ko'rinishda izlanadi

✓ $y = uv$

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

✓ chiziqli bir jinsli

12. Differensial tenglamani yeching:

$$\begin{aligned} y' - 2xy &= -2x \\ y(0) &= 3 \end{aligned}$$

✓ $y = 1 + 2e^{x^2}$

13. $y'' + 3y' = e^{-3x}$ tenglamaning umumiy yechimini toping

✓ $y = C_1 + \left(C_2 - \frac{x}{3}\right)e^{-3x}$

14. Bir jinsl differensial tenglamaga keltiriladigan differensial tenglamaning umumiy ko'rinishini toping

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

15. $y'' - y' - 2y = 0$ tenglamaning xarakteristik tenglamasi va umumiy yechimi to'g'ri ko'rsatilgan qatorni aniqlang

✓ $k^2 - k - 2 = 0,$
 $y = C_1e^{-x} + C_2e^{2x}$

16. $y'' - 4y' + 13y = 0$ tenglamaning fundamental yechimlari sistemasini toping

✓ $y_1 = e^{2x} \cos 3x,$

$y_2 = e^{2x} \sin 3x$

17. $y'' - y' = \cos 2x$ tenglamaning umumiy yechimini toping

$y = C_1 + C_2 e^x -$

✓ $-\frac{1}{5} \cos 2x - \frac{1}{10} \sin 2x$

18. Quyidagi tenglamalarni qaysi biri Bernulli tenglamasi hisoblanadi:

✓ $y' + P(x)y = Q(x)y^\alpha$

19. $x^2 y' = y^2 + xy$ differensial tenglamani yeching

✓ $y = \frac{x}{C - \ln|x|}$

20. Aslning tasvirini toping: $f(t) = t + \frac{1}{2}e^{-t}$

✓ $F(p) = \frac{p^2 + 2p + 2}{2p^2(p+1)}$

Imtihon	1-курс Дифференциал тенгламалар фанидан якуний назорат-MTH1224
Talaba	ABDUXALILOV ABDULAZIZ IKROMJON O'G'LI
Guruh	130-20 Rio'
Boshlandi	07.07.2021 11:23
Tugadi	07.07.2021 12:01
To'g'ri	19
Foiz	95.0

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

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

2. 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

3. $y'' + 5y' + 6y = 0$ tenglamaning $y(0) = 1$, $y'(0) = -6$, boshlang'ich shartlarni qanoatlantiruvchi yechimini toping

✓ $y = 4e^{-3x} - 3e^{-2x}$

4. Quyidagilardan qaysi biri birinchi tartibli differensial tenglama uchun Koshi masalasi bo'ladi?

✗ $\begin{cases} y' = f(x, y) \\ y(a) = A; y(b) = B \end{cases}$

5. Aslning tasvirini toping: $f(t) = \sin 4t$

✓ $F(p) = \frac{4}{p^2 + 16}$

6. $y'' = xe^{-x}$ tenglamaning $y(0) = 1$, $y'(0) = 0$ shartni qanoatlantiruvchi yechimini toping

✓ $y = (x + 2)e^{-x} + x - 1$

7. Klero tenglamasini aniqlang

✗ $y = x + \psi(y')$

8. Quyidagilarni qaysi biri bir jinsli differensial tenglamaning ko‘rinishini ifodalash

✓ $y' = \varphi\left(\frac{y}{x}\right)$

9. Tasvirning asl funksiyasi topilsin: $F(p) = \frac{p}{(p^2 - 1)^2}$

✓ $f(t) = \frac{1}{2}t \cdot \sin t$

10. Chiziqli differensial tenglamani yeching: $y' - \frac{3y}{x} = x$

✓ $y = Cx^3 - x^2$

11. $y'' - 3y' - 4y = e^{4x}$ tenglamaning umumiy yechimini toping

✓ $y = C_1 e^{-x} + \left(C_2 + \frac{x}{5}\right) e^{4x}$

12. $y'' - 7y' + 6y = 0$ tenglamaning umumiy yechimini toping.

✓ $y = C_1 e^{6x} + C_2 e^x$

13. Quyidagilarning qaysi biri 1-tartibli chiziqli differensial tenglamaning umumiy ko‘rinishi?

✓ $y' + p(x) \cdot y + q(x) = 0$

14. Lagranj tenglamasining ko‘rinishini aniqlang

✓ $y = x\varphi(y') + \psi(y')$

15. Aslning tasvirini toping: $f(t) = e^{2t} \sin t$

✓ $F(p) = \frac{1}{(p-2)^2 + 1}$

16. Ushbu $y' = \frac{x-2y-3}{x+y}$ tenglamani bir jinsliga keltirish uchun qanday almashtirish bajariladi?

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

17. Fundamental yechimlari sistemasi $y_1 = e^{2x}$, $y_2 = e^{3x}$ bo‘lgan chiziqli bir jinsli differensial tenglama tuzing.

✓ $y'' - 5y' + 6y = 0$

18. Differensial tenglamani yeching. $y' + \frac{2y}{x} = x^3$

✓ $y = \frac{x^4}{6} + \frac{C}{x^2}$

19. Tenglamani yeching: $x'' - 2x' + x = e^t$,
 $x(0) = 0, x'(0) = 1$.

✗ $x(t) = \frac{1}{2}t + te^t$.

20. Tenglamani yeching: $x' - x = 1, x(0) = -1$.

✓ $x(t) = -1$.

Imtihon 1-курс Дифференциал тенгламалар фанидан якуний назорат-МТН1224

Talaba NABIYEVA SITORA LAZIZ QIZI

Guruh 650-20 KTo`

Boshlandi 07.07.2021 12:26

Tugadi 07.07.2021 12:37

To'g'ri 16

Foiz 80.0

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

✗ $y = e^{-x} + \frac{x^3}{3} + C_1x + C_2$

2. Ushbu sistema $\begin{cases} C'_1(x) \cos x + C'_2(x) \sin x = 0 \\ -C'_1(x) \sin x + C'_2(x) \cos x = 4 \operatorname{ctgx} x \end{cases}$ qaysi differensial tenglamani o'zgarmasni variatsiyalash usulida yechish uchun tuzilgan?

✗ $y'' + y' = 4 \operatorname{ctgx} x$

3. Differensial tenglamani yeching: $y' - 2xy = e^{x^2}$

✗ $y = (x^2 + C)e^{x^2}$

4. $y'' - 4y' + 4y = 0$ tenglamaning umumiyl yechimini toping

✓ $y = C_1e^{2x} + C_2xe^{2x}$

5. Tasvirning asl funksiyasi topilsin: $F(p) = \frac{p}{(p^2 - 1)^2}$

✗ $f(t) = -\frac{1}{2}t \cdot \sin t$

6. Quyidagilardan qaysi biri birinchi tartibli differensial tenglama uchun Koshi masalasi bo'ladi?

✓
$$\begin{cases} y' = f(x, y) \\ y(x_0) = y_0 \end{cases}$$

7. Quyidagi tenglama uchun integralovchi ko‘paytuvchi qanday bo‘ladi:

$$(1 - yx)dx + x(y - x)dy = 0 ?$$

✗ $\mu(x) = \frac{1}{x^2}$

8. $4y'' - y = x^3 - 24x$ tenglamaning umumiy yechimini toping.

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

9. Ushbu $y'' - 2y' + y = \frac{e^x}{x}$ differensial tenglamani o‘zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani aniqlang.

✗
$$\begin{cases} C'_1(x)e^x + C'_2(x)xe^x = \frac{e^x}{x} \\ C'_1(x)e^x + C'_2(x)(1+x)e^x = 0 \end{cases}$$

10. $y'' - 7y' + 6y = 0$ tenglamaning umumiy yechimini toping.

✓ $y = C_1 e^{6x} + C_2 e^x$

11. $y'' + 3y' = e^{-3x}$ tenglamaning umumiy yechimini toping

✓ $y = C_1 + \left(C_2 - \frac{x}{3} \right) e^{-3x}$

12. Differensial tenglamani yeching: $y' - \frac{2y}{x} = x^2 e^x$

✗ $y = e^x (x^2 + C)$

13. Bernulli tenglamasi qanday tenglamaga keltiriladi?

✓ Chiziqli

14. $y'' = xe^{-x}$ tenglamaning $y(0) = 1, y'(0) = 0$ shartni qanoatlantiruvchi yechimini toping

✓ $y = (x + 2)e^{-x} + x - 1$

15. $y'' + y = 3 \sin x$ tenglamaning umumi yechimini toping

✓ $y = C_1 \cos x + C_2 \sin x - 1,5x \cos x$

16. Klero tenglamasini aniqlang

✓ $y = xy' + \psi(y')$

17. $9y'' + y = 0$ tenglamaning $y\left(\frac{3\pi}{2}\right) = 2, y'\left(\frac{3\pi}{2}\right) = 0$, boshlang'ich shartlarni qanoatlantiruvchi yechimini toping

✗ $y = \frac{1}{2} \sin \frac{x}{3}$

18. $y'' = e^{-x}$ tenglamaning $y(0) = 1, y'(0) = 0$ shartni qanoatlantiruvchi yechimini toping

✗ $y = e^{-x} + x + 1$

19. Chiziqli differensial tenglamani yeching: $y' - \frac{3y}{x} = x$

✓ $y = Cx^3 - x^2$

20. Quyidagilardan qaysi biri to‘la differensial tenglama bo‘la olmaydi?

✗ $(y + \sin x) dx +$
 $+ (x - \cos y) dy = 0.$

Imtihon 1-курс Дифференциал тенгламалар фанидан якуний назорат-МТН1224

Talaba SHARIPOV BEKZOD AXROR O‘G‘LI

Guruh 650-20 KTo`

Boshlandi 07.07.2021 12:25

Tugadi 07.07.2021 13:00

To‘g’ri 10

Foiz 50.0

1. Tenglamani yeching: $x'' - 2x' + 2x = 1$,
 $x(0) = x'(0) = 0$.

✗ $x(t) = \frac{1}{2}(1 - e^t \cos t)$.

2. $y'' + 4y' = 2$ tenglamaning umumi yechimini toping

✓ $y = C_1 + C_2 e^{-4x} + \frac{x}{2}$

3. O'xhashlik teoremasini aniqlang:

✓ $f(\alpha t) \leftarrow \frac{1}{\alpha} F\left(\frac{p}{\alpha}\right)$

4. $y'' - y' - 2y = 0$ tenglamaning $y(0) = 0$ va $y'(0) = 3$ boshlang'ich shartni qanoatlantiruvchi yechimini toping

✗ $y = e^{2x} + e^{-x}$

5. O'zgaruvchilari ajraladigan differensial tenglamani aniqlang.

✗ $(x^2 - 2xy)dy = (xy - y^2)dx$.

6. $y''' = \cos x$ tenglamining umumi yechimini toping

✓ $y = -\sin x + \frac{C_1 x^2}{2} + C_2 x + C_3$

7. Quyidagi tenglama uchun integralovchi ko‘paytuvchi qanday bo‘ladi:

$$(x^2 - y)dx + (x^2 y^2 + x)dy = 0$$

✓ $\mu(x) = \frac{1}{x^2}$

8. $4y'' - y = x^3 - 24x$ tenglamaning umumiy yechimini toping.

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

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

✓ birinchi tartibli

10. Tenglamani yeching: $x' - x = 1, x(0) = -1$.

✓ $x(t) = -1$.

11. Quyidagilardan qaysi biri to‘la differensial tenglamaning umumiy yechimi bo‘ladi?

✓ $\int\limits_{x_0}^x M(x, y)dx + \int\limits_{y_0}^y N(x_0, y)dy = C$

12. Differensial tenglamani yeching: $y' + 2y = 3e^x$

✓ $y = Ce^{-2x} + e^x$

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

✓ $y = \frac{1}{24}x^4 + \frac{1}{2}C_1x^2 + C_2x + C_3$

14. Klero tenglamasini aniqlang

✓ $y = xy' + \psi(y')$

15. $y'' - y' - 2y = 0$ tenglamaning xarakteristik tenglamasi va umumiy yechimi to‘g‘ri ko‘rsatilgan qatorni aniqlang

✓ $k^2 - k - 2 = 0,$
 $y = C_1e^{-x} + C_2e^{2x}$

16. $y'' - 10y' + 25y = 0$ tenglamaning $y(0) = 0, y'(0) = 1$, boshlang‘ich shartlarni qanoatlantiruvchi yechimini toping

✓ $y = xe^{5x}$

17. $y'' - 4y' + 3y = e^{3x}$ tenglamaning umumiy yechimini toping

✓ $y = C_1e^x + \left(C_2 + \frac{x}{2}\right)e^{3x}$

18. $y'' - y = \sin x$ tenglamaning umumiyligini toping?

✓ $y = C_1 e^{-x} + C_2 e^x - \frac{1}{2} \sin x$

19. Differensial tenglamani yeching: $y' = \frac{y+1}{x+1}$

✓ $y = -1 + C(x+1)$

20. Tasvirning asl funksiyasi topilsin: $F(p) = \frac{e^{-2p}}{p^2 - 9}$

✗ $f(t) = \frac{1}{3} \sin(3t - 2)$.

Imtihon 1-курс Дифференциал тенгламалар фанидан якуний назорат-МТН1224

Talaba BEKNIYOZOVA SHAXODAT SHAVKATOVNA

Guruh 650-20 KTo`

Boshlandi 07.07.2021 11:02

Tugadi 07.07.2021 11:24

To'g'ri 16

Foiz 80.0

1. $y' = \frac{2xy}{x^2 - y^2}$ differensial tenglamani yeching

✓ $x^2 + y^2 = Cy$

2. Qaysi bir formula noto‘g‘ri?

✗ $-t \cdot f(t) \leftarrow F'(p)$

3. Tenglamani yeching: $x'' + 2x' + x = \sin t$,
 $x(0) = 0, x'(0) = -1$

✓ $x(t) = \frac{1}{2} (e^{-t} - t e^{-t} - \cos t).$

4. Tenglamani yeching: $x'' - 2x' = e^{2t}$,
 $x(0) = x'(0) = 0.$

✗ $x(t) = (1 - e^{2t} + 2t e^{2t}).$

5. $y' = \frac{a_1x + b_1y + c_1}{a_2x + b_2y + c_2}$ tenglama qachon o‘zgaruvchilari ajraladigan differensial tenglamaga keladi?

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

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

✗ $y = \ln \frac{C}{x}$

7. Quyidagi tenglama uchun integralovchi ko‘paytuvchi qanday bo‘ladi:

$$(x^2 - y)dx + (x^2 y^2 + x)dy = 0$$

✓ $\mu(x) = \frac{1}{x^2}$

8. Differensial tenglamani xususiy yechimini toping $2\sqrt{y}dx - dy = 0$, $y(0) = 1$

✓ $y = (x + 1)^2$

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

✓ xususiy hosilali

10. Tenglamaning umumi yechimini toping $y' = xy$

✓ $y = Ce^{\frac{x^2}{2}}$

11. Tenglamaning tipini aniqlang: $xy' + y = x \ln x$.

✗ Bir jinsli tenglamaga keltiriladigan

12. Quyidagi tenglama uchun integralovchi ko‘paytuvchi qanday bo‘ladi:

$$ydx - (x + y^2)dy = 0 ?$$

✓ $\mu(y) = \frac{1}{y^2}$

13. $y'' + 2y' - 3y = e^{2x}$ tenglamaning umumiy yechimini toping

✓ $y = C_1 e^{-3x} + C_2 e^x + \frac{1}{5} e^{2x}$

14. O‘xshashlik teoremasini aniqlang:

✓ $f(\alpha t) \leftarrow \frac{1}{\alpha} F\left(\frac{p}{\alpha}\right)$

15. Tenglamani yeching: $x'' + x = 1$,
 $x(0) = -1, x'(0) = 0$.

✗ $x(t) = 1 - \cos 2t$.

16. Quyidagilardan qaysi biri to‘la differensial tenglama bo‘la olmaydi?

✗ $e^y dx + (xe^y - 2y)dy = 0$.

17. Noma'lumlarni yo'qotish usulida Koshi masalasini yeching:

$$\begin{cases} x' = -y + 2 \\ y' = x + 1 \end{cases} \quad x(0) = -1, y(0) = 0.$$

✗ $\begin{cases} x(t) = 2 \sin t - 1 \\ y(t) = 2 \cos t - 2 \end{cases}$

18. Tasvirning asl funksiyasi topilsin: $F(p) = \frac{1}{p^2(p^2+1)}$

✗ $f(t) = t \sin t$

19. Ushbu $y'' - 2y' + y = \frac{e^x}{x}$ differensial tenglamani o'zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani aniqlang.

✗ $\begin{cases} C'_1(x)e^x + C'_2(x)e^{-x} = 0 \\ C'_1(x)e^x - C'_2(x)e^{-x} = \frac{e^x}{x} \end{cases}$

20. Erkli o'zgaruvchi, noma'lum funksiya va uning hosilalari yoki differensiallarini bog'lovchi tenglamaga ... deyiladi.

✓ differensial tenglama

Imtihon 1-курс Дифференциал тенгламалар фанидан якуний назорат-МТН1224

Talaba MAGRUBOVA MOXICHEHRA ZAFAR QIZI

Guruh 650-20 KTo`

Boshlandi 07.07.2021 12:21

Tugadi 07.07.2021 12:59

To'g'ri

11

Foiz

55.0

1. Differensial tenglamani yeching: $y' + y = 5$

✓ $y = 5 + Ce^{-x}$

2. $x^2y' = y^2 + xy$ differensial tenglamani yeching

✓ $y = \frac{x}{C - \ln|x|}$

3. Tenglananing tipini aniqlang: $xy' + y = x \ln x$.

✗ Bir jinsli tenglamaga keltiriladigan

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

✗ $y'' = p \frac{dp}{dy}$

5. Chiziqli differensial tenglamani yeching: $y' - \frac{3y}{x} = x$

✓ $y = Cx^3 - x^2$

6. $y'' + 4y' = 2$ tenglananing umumiy yechimini toping

✓ $y = C_1 + C_2 e^{-4x} + \frac{x}{2}$

7. Differensial tenglamalar sistemasini noma'lumlarni yo'qotish usulida yeching:

$$\begin{cases} y' = 2y + z \\ z' = 3y + 4e^x \end{cases}$$

✓ $\begin{cases} y(x) = C_1 e^{-x} + C_2 e^{3x} - e^x \\ z(x) = -3C_1 e^{-x} + C_2 e^{3x} + e^x \end{cases}$

8. Ushbu $y'' + y = 4\operatorname{ctgx}$ differensial tenglamani o'zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani aniqlang.

✓ $\begin{cases} C'_1(x) \cos x + C'_2(x) \sin x = 0 \\ -C'_1(x) \sin x + C'_2(x) \cos x = 4\operatorname{ctgx} \end{cases}$

9. Tenglamaning tipini aniqlang: $y' - \frac{y}{x} = x + 1$

✗ Bir jinsli differensial tenglama

10. $F(x, y^{(k)}, y^{(k+1)}, \dots, y^{(n)}) = 0$ tenglamaning tartibini pasaytirish uchun qanday almashtirish bajariladi?

✓ $z = y^{(k)}, z' = y^{(k+1)}, \dots, z^{(n-k)} = y^{(n)}$ almashtirish bajariladi

11. Agar differensial tenglamalar sistemasi ikki noma'lumli normal sistema bo'lsa, uning umumiy yechimining ko'rinishini aniqlang.

✓ $\begin{cases} y = \varphi_1(x, C_1, C_2) \\ z = \varphi_2(x, C_1, C_2) \end{cases}$

12. Qaysi bir tenglamada $z = y^{-1}$ almashtirish orqali chiziqli differensial tenglama hosil qilinadi:

- 1) $(y - y^2)dx - (x - 1)dy = 0$
2) $y' - 2ytgx + y^2 \sin^2 x = 0$
3) $xy + y^2 = (2x^2 + xy)y'$?

✗ Faqtat 2)

13. Quyidagilardan qaysi biri to‘la differensial tenglananing umumiy yechimi bo‘ladi?

✓ $\int_{x_0}^x M(x, y)dx + \int_{y_0}^y N(x_0, y)dy = C$

14. Quyidagi tenglamalarning qaysi biri o‘zgaruvchilari ajraladigan tenglama?

✓ $(1+x^2)dy + ydx = 0$

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

✓ maxsus yechim

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

✓ oddiy

17. Qaysi bir formula noto‘g‘ri?

✗ $f(at) \leftarrow \frac{1}{a} F\left(\frac{p}{a}\right)$

18. Tenglamani yeching:
 $x''(t) + x(t) = 2 \cos t,$
 $x(0) = 0, x'(0) = -1;$

✗ Yechimga ega emas

19. $y'' - 16y = x - 1$ tenglananing umumiylarini toping

✓
 $y = C_1 e^{-4x} + C_2 e^{4x} -$
 $\quad -\frac{1}{16}x + \frac{1}{16}$

20. $y'' = e^x$ tenglananing umumiylarini toping

✓ $y = e^x + C_1 x + C_2$

Imtihon 1-курс Дифференциал тенгламалар фанидан якуний назорат-МТН1224

Talaba ABDUSALOMOV AZIZBEK KOMILOVICH

Guruh 650-20 KTo`

Boshlandi 07.07.2021 11:24

Tugadi 07.07.2021 11:55

To'g'ri 14

Foiz 70.0

1. $y'''' - 5y'' + 4y = 0$ tenglamany xarakteristik tenglamasi ildizlarini toping

✓ $k_1 = -1, \quad k_2 = 1,$
 $k_3 = -2, \quad k_4 = 2$

2. Tenglamani yeching: $x''(t) + x(t) = 2 \cos t,$
 $x(0) = 0, x'(0) = -1;$

✗ $x(t) = (t + 1) \sin t.$

3. Tenglamani yeching: $x'' + 3x' = e^t,$
 $x(0) = 0, x'(0) = -1.$

✓ $x(t) = \frac{1}{4}e^t + \frac{5}{12}e^{-3t} - \frac{2}{3}.$

4. Aslning tasvirini toping: $f(t) = t + 2e^t$

✓ $F(p) = \frac{2p^2 + p - 1}{p^2(p - 1)}$

5. Tasvirning asl funksiyasi topilsin: $F(p) = \frac{e^{-3p}}{p+2}$

✓ $f(t) = e^{-2(t-3)}\eta(t-3)$

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

✓ $y = C_1 e^x + C_2 e^{-x}$

7. Agar differensial tenglamalar sistemasi ikki noma'lumli normal sistema bo'lsa, uning umumiy yechimining ko'rinishini aniqlang.

✓ $\begin{cases} y = \varphi_1(x, C_1, C_2) \\ z = \varphi_2(x, C_1, C_2) \end{cases}$

8. $y'''' + 5y'' + 4y = 0$ tenglamaning xarakteristik tenglamasi ildizlarini toping

✓ $k_{1,2} = \pm i, k_{3,4} = \pm 2i$

9. Quyidagilarning qaysi biri 1-tartibli chiziqli differensial tenglamaning umumiy ko'rinishi?

✗ $y' = \varphi(x) + g(y)$

10. $y'' = xe^{-x}$ tenglamaning $y(0) = 1, y'(0) = 0$ shartni qanoatlantiruvchi yechimini toping

✗ $y = (x+2)e^{-x} + 1$

11. Quyidagilardan qaysi biri o'ng tomoni maxsus ko'rinishda bo'lgan differensial tenglama bo'la olmaydi va u o'zgarmasni variatsiyalash usulida yechiladi?

✓ $y'' + y = \frac{1}{\sin x}$

12. Quyidagilardan qaysi biri o'ng tomoni maxsus ko'rinishda bo'lgan differensial tenglama bo'la olmaydi va u o'zgarmasni variatsiyalash usulida yechiladi?

✓ $y'' + 9y = 9 \sec 3x$

13. Tenglamani yeching $\frac{ds}{dt} = \frac{s}{t} - \frac{t}{s}$

✗ $s^2 = t^2 \ln \left| \frac{C}{t} \right|$

14. $y'' - 16y = x - 1$ tenglananing umumi yechimini toping

✓
$$y = C_1 e^{-4x} + C_2 e^{4x} - \frac{1}{16}x + \frac{1}{16}$$

15. $y' + P(x)y = Q(x)$ tengamanini yechishning Bernulli usulida umumi yechim ... ko'rinishda izlanadi

✓ $y = uv$

16. Differensial tenglamani yeching: $y' + y = 5$

✓ $y = 5 + Ce^{-x}$

17. $y'' - y = 0$ tenglananing $y(0) = 0$, $y'(0) = 2$ boshlang'ich shartlarni qanoatlantiruvchi yechimini toping

✓ $y = e^x - e^{-x}$

18. Tenglamani yeching: $x'' - 4x' + 3x = 3,$
 $x(0) = 0, x'(0) = 1$

✗ $x(t) = \frac{1}{2}t^2 - t - e^t + e^{3t}$

19. Tenglamani yeching: $x'' + 4x = t,$
 $x(0) = 1, x'(0) = 0.$

✓ $x(t) = \frac{1}{4}t + \cos 2t - \frac{1}{8}\sin 2t.$

20. Quyidagilarni qaysi biri chiziqli tenglamaning umumiy ko'rinishi?

✓ $y' + P(x)y = Q(x)$

Imtihon 1-курс Дифференциал тенгламалар фанидан якуний назорат-МТН1224

Talaba RAXIMOV OTABEK TOLIBJON O'G'LII

Guruh 213-20Klo'

Boshlandi 07.07.2021 11:50

Tugadi 07.07.2021 12:30

To'g'ri 15

Foiz 75.0

1. Bir jinsli differensial tenglama uchun Koshi masalasi aniqlang

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

2. Tenglamani yeching: $y''(t) - 6y'(t) + 9y(t) = 0$.
 $y(0) = A, y'(0) = B$.

✓ $y(t) = (B - 3A)te^{3t} + Ae^{3t}$

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

✓ birinchi tartibli

4. $y'' = xe^{-x}$ tenglananing $y(0) = 1, y'(0) = 0$ shartni qanoatlantiruvchi yechimini toping

✗ $y = (x + 2)e^{-x}$

5. Ushbu $y' + \frac{y}{3} = \frac{x+1}{3y^3}$ tenglamani qanday almashtirish yordamida yechish mumkin?

✗
$$\begin{aligned} z &= y^{-3}, \\ z' &= -y^{-4} \cdot y' \end{aligned}$$

6. $y'' - 10y' + 25y = 0$ tenglananing $y(0) = 0, y'(0) = 1$, boshlang'ich shartlarni qanoatlantiruvchi yechimini toping

✓ $y = xe^{5x}$

7. Tasvirning asl funksiyasi topilsin: $F(p) = \frac{p}{(p^2 - 1)^2}$

✓ $f(t) = \frac{1}{2}t \cdot \sin t$

8. Lagranj tenglamasining ko'rinishini aniqlang

✓ $y = x\varphi(y') + \psi(y')$

9. Ushbu $y'' - 2y' + y = \frac{e^x}{x}$ differensial tenglamani o'zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani aniqlang.

✗ $\begin{cases} C'_1(x)e^x + C'_2(x)xe^x = \frac{e^x}{x} \\ C'_1(x)e^x + C'_2(x)(1+x)e^x = 0 \end{cases}$

10. $y'' - 4y' - 5y = x$ tenglananining umumiy yechimini toping?

✓ $y = C_1 e^{-x} + C_2 e^{5x} - \frac{1}{5}x + \frac{4}{25}$

11. Tenglananining tipini aniqlang: $y' = f_1(x)f_2(y)$

✓ O'zgaruvchilari ajraladigan

12. Aslning tasvirini toping: $f(t) = te^{ta}$

✗ $F(p) = \frac{1}{(p+1)^2}$

13. $y'' + 25y = 0$ tenglamaning umumi yechimini toping

✓ $y = C_1 \cos 5x + C_2 \sin 5x$

14. Rikkati tenglamasini aniqlang

✓ $y' = a(x)y^2 + b(x)y + c(x)$

15. Tenglamani yeching: $x'' - 2x' + 2x = 1,$
 $x(0) = x'(0) = 0.$

✗ $x(t) = \frac{1}{2}(1 - e + e^t \sin t).$

16. 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.

✗ $\begin{cases} C_1y'_1 + C_2y'_2 = 0 \\ C_1y'_1 + C_2y'_2 = f(x) \end{cases}$

17. $y'' - y' - 2y = 0$ tenglamaning xarakteristik tenglamasi va umumi yechimi to'g'ri ko'rsatilgan qatorni aniqlang

✓ $k^2 - k - 2 = 0,$
 $y = C_1 e^{-x} + C_2 e^{2x}$

18. Differensial tenglamalar sistemasini noma'lumlarni yo'qotish usulida yeching:

$$\begin{cases} y' = 2y + z \\ z' = 3y \end{cases}$$

✗ $\begin{cases} y(x) = C_1 e^x + C_2 e^{-3x} \\ z(x) = 3C_1 e^x - C_2 e^{-3x} \end{cases}$

19. Aslning tasvirini toping: $f(t) = t + 2e^t$

✓ $F(p) = \frac{2p^2 + p - 1}{p^2(p-1)}$

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

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

Imtihon 1-курс Дифференциал тенгламалар фанидан якуний назорат-МТН1224

Talaba TURSUNOVA MUXLISA MAXAMADJON QIZI

Guruh 650-20 KTo`

Boshlandi 07.07.2021 11:46

Tugadi 07.07.2021 12:31

To'g'ri 12

Foiz

60.0

1. $y'' - y' - 2y = 0$ tenglamaning $y(0) = 0$ va $y'(0) = 3$ boshlang‘ich shartni qanoatlantiruvchi yechimini toping

✓ $y = e^{2x} - e^{-x}$

2. Tasvirning asl funksiyasi topilsin: $F(p) = \frac{p+1}{p^2 - 2p + 5}$

✗ $f(t) = e^t (\cos 2t - \sin 2t)$

3. $x'' + 2x' = \cos t$, $x(0) = 0$, $x'(0) = 0$ differensial tenglama uchun tuzilgan algebraik tenglamani aniqlang.

✗ $X(p) = \frac{1}{(p-2)(p^2 + 1)}$

4. $1 + y'^2 = y y''$ tenglamada qanday almashtirish bajariladi?

✗ $y' = p$, $y'' = p \frac{dp}{dx}$

5. Quyidagilarni qaysi biri bir jinsli differensial tenglamaning ko‘rinishini ifodalash

✗ $y' = \varphi(x)$

6. Ushbu $y'' + 2y' - 3y = xe^{3x}$ differensial tenglamani o‘zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani aniqlang.

✗
$$\begin{cases} C_1'(x)e^x + C_2'(x)xe^x = 0 \\ C_1'(x)e^x - C_2'(x)(1+x)e^x = xe^{3x} \end{cases}$$

7. Tenglamani yeching:
 $x''(t) + x(t) = 2 \cos t,$
 $x(0) = 0, x'(0) = -1;$

✗ $x(t) = (t+1)\sin t.$

8. Ushbu sistema $\begin{cases} C_1'(x)\cos x + C_2'(x)\sin x = 0 \\ -C_1'(x)\sin x + C_2'(x)\cos x = 4\operatorname{ctgx} x \end{cases}$ qaysi differensial tenglamani o'zgarmasni variatsiyalash usulida yechish uchun tuzilgan?

✓ $y'' + y = 4\operatorname{ctgx} x$

9. Differensial tenglamani yeching: $y' - \frac{y}{x} = -\frac{12}{x^3}$

✓ $y = \frac{4}{x^2} + Cx$

10. Tenglamani yeching: $x' + x = e^t, x(0) = 0$

✗ $x(t) = te^t$

11. $y' = \frac{y^2}{x^2} - 2$ differensial tenglamani yeching.

✓ $y = 2x + Cx^3(y+x)$

12. Lagranj tenglamasining ko'rnishini aniqlang

✗ $x = y\varphi(y') + \psi(y')$

13. Tenglamani yeching: $x'' - 4x' + 3x = 3,$
 $x(0) = 0, x'(0) = 1$

✓ $x(t) = 1 - 2e^t + e^{3t}$

14. Tenglamani yeching: $x'' + x' = 1, x(0) = 0, x'(0) = 1$

✗ $x(t) = 1.$

15. $xy'' = y'\ln\frac{y'}{x}$ tenglama tartibini pasaytirishdan hosil qilingan tenglamani ko'rsating

✓ $p' = \frac{p}{x} \ln \frac{p}{x}$

16. $y' = \frac{2xy}{x^2 - y^2}$ differensial tenglamani yeching

✗ $x^2 + y^2 = Cx$

17. $y' = \frac{y}{x-y}$ differensial tenglamani yeching.

✗ $\ln|x| + \frac{x}{y} = C$

18. Differensial tenglamani yeching: $y' + y = 5$

✓ $y = 5 + Ce^{-x}$

19. $y'' - 2y' = x^2 - x$ tenglamaning umumiy yechimini toping

✓ $y = C_1 + C_2 e^{2x} - \frac{x^3}{6}$

20. Aslning tasvirini toping: $f(t) = te^{ta}$

✗ $F(p) = \frac{1}{(p-a)}$

Imtihon 1-курс Дифференциал тенгламалар фанидан якуний назорат-МТН1224

Talaba SALOMOV FURQAT TO'LQIN O'G'LI

Guruh 650-20 KTo`

Boshlandi 07.07.2021 11:47

Tugadi 07.07.2021 12:32

To'g'ri 8

Foiz 40.0

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

✗ $y' = \varphi(x) \cdot g(y)$

2. Tenglamani umumiy yechimini toping $y' = 2x + y$

✓ $y = Ce^x - 2x - 2$

3. Chiziqli differensial tenglamani yeching: $y' + \frac{2y}{x} = \frac{e^{-x^2}}{x}$

✓ $y = \frac{C - e^{-x^2}}{2x^2}$

4. Tasvirning siljish teoremasini aniqlang:

✗ $e^{-\alpha t} f(t) \doteq F(p - \alpha)$

5. Bernulli tenglamasi qanday tenglamaga keltiriladi?

✓ Chiziqli

6. Differensial tenglamani yeching: $y' - 2xy = -2x$
 $y(0) = 3$

✓ $y = 1 + 2e^{x^2}$

7. $y'' + y' = x$ tenglamaning umumiyligini toping

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

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

✗ to‘la
differensial

9. $y'' + 4y' = 2$ tenglamaning umumiyligini toping

✓ $y = C_1 + C_2 e^{-4x} + \frac{x}{2}$

10. Qaysi almashtirish ushbu $y' = \frac{1-3x-3y}{1+x+y}$ tenglamani o‘zgaruvchilari ajraladigan tenglamaga keltiradi?

✗ $1+x+y = xu$

11. Aslning tasvirini toping: $f(t) = \sin 4t$

✓ $F(p) = \frac{4}{p^2 + 16}$

12. Ushbu $y'' + py' + qy = f(x)$ differensial tenglamani o‘zgarmasni variatsiyalash usulida yechishda $C_1(x)$ va $C_2(x)$ funksiyalarini aniqlovchi tenglamalar sistemasini tuzing.

✗ $\begin{cases} C_1y_1 + C_2y_2 = 0 \\ C_1y'_1 + C_2y'_2 = f(x) \end{cases}$

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

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

14. $y'' = \cos^2 x$ tenglamaning $y(0) = \frac{1}{32}$, $y'(0) = 0$, $y''(0) = \frac{1}{8}$, $y'''(0) = 0$ shartlarni qanoatlantiruvchi yechimini toping

✓ $y = \frac{1}{48}x^4 + \frac{1}{8}x^2 + \frac{1}{32}\cos 2x$

15. Quyidagilarni qaysi biri chiziqli differnsial tenglamani yechishning almashtirishi hisoblanadi

✓ $y = u(x) \cdot v(x)$

16. $1 + y'^2 = y y''$ tenglamada qanday almashtirish bajariladi?

✗ $y' = p, \quad y'' = p \frac{dp}{dx}$

17. Ushbu $y' = \frac{x-2y-3}{x+y}$ tenglamani bir jinsliga keltirish uchun qanday almashtirish bajariladi?

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

18. Ushbu $y' + P(x)y = Q(x)y^n$ ko‘rinishdagi tenglama qanday nomlanadi?

✗ Chiziqli tenglama

19. Quyidagilardan qaysi biri to‘la differensial tenglama bo‘la olmaydi?

✗ Javob belgilanmagan

20. $y'' - 5y = \sin 5x$ tenglamaning umumiy yechimini toping

✓
$$y = C_1 e^{-\sqrt{5}x} + C_2 e^{\sqrt{5}x} - \frac{1}{30} \sin 5x$$

Imtihon 1-курс Дифференциал тенгламалар фанидан якуний назорат-МТН1224

Talaba MURODULLAYEV ZAFARBEK NARZULLA O‘G‘LI

Guruhi 650-20 KTo`

Boshlandi 07.07.2021 11:53

Tugadi 07.07.2021 12:38

To‘g’ri 11

Foiz 55.0

1. $y'''(x-1) - y'' = 0$ tenglamada qanday almashtirish bajariladi?

✗ $p' = y'', \quad p'' = y'''$

2. 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.

✗ oddiy differensial

3. Quyidagilarni qaysi biri bir jinsli differnsial tenglamaga keltiriladigan tenglama?

✗ $y' = \frac{y}{x^2 + 1}$

4. $y'' - 4y' - 5y = x$ tenglamaning umumiy yechimini toping?

✗ $y = C_1 e^{-x} + C_2 e^{5x} + \frac{1}{5}x - \frac{4}{25}$

5. tenglamalar sistemasini yechimini ko'rsating $\begin{cases} \dot{x} = y + 2x \\ \dot{y} = 3x + 4y \end{cases}$

✗ $\begin{aligned} x &= c_1 e^{-t} + c_2 e^{5t} \\ y &= -c_1 e^{-t} + 3c_2 e^{5t} \end{aligned}$

6. Tenglamani yeching: $x' + x = e^{-t}, x(0) = 1$.

✓ $x(t) = (t+1)e^{-t}$.

7. Ushbu sistema $\begin{cases} C_1'(x) \cos x + C_2'(x) \sin x = 0 \\ -C_1'(x) \sin x + C_2'(x) \cos x = 4ctgx \end{cases}$ qaysi differensial tenglamani o'zgarmasni variatsiyalash usulida yechish uchun tuzilgan?

✓ $y'' + y = 4ctgx$

8. $y'' = e^{-x}$ tenglamaning $y(0) = 1, y'(0) = 0$ shartni qanoatlantiruvchi yechimini toping

✗ $y = e^{-x} + x^2 + x$

9. Rikkati tenglamasini aniqlang

✓ $y' = y^2 + 2y + 2$

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

✓ $y = \frac{1}{24}x^4 + \frac{1}{2}C_1x^2 + C_2x + C_3$

11. $F(x, y^{(k)}, y^{(k+1)}, \dots, y^{(n)}) = 0$ tenglama tartibini pasaytirganda hosil bo'lgan tenglamaning tartibini aniqlang

✗ $n - k^2$

12. Quyidagilardan qaysi biri o'ng tomoni maxsus ko'rinishda bo'lgan differensial tenglama bo'la olmaydi va u o'zgarmasni variatsiyalash usulida yechiladi?

✗ $y'' + y = \frac{\sin x}{e^x}$

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

✓ $y = C_1 e^x + \left(C_2 - \frac{x}{2} \right) e^{-x}$

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

✗ to‘la
differensial

15. Fundamental yechimlari sistemasi $y_1 = e^{2x}$, $y_2 = e^{3x}$ bo‘lgan chiziqli bir jinsli differensial tenglama tuzing.

✗ $y'' + 5y' + 6y = 0$

16. Tenglamani yeching: $x'' - 2x' + x = e^t$,
 $x(0) = 0, x'(0) = 1$.

✓ $x(t) = \frac{1}{2}t^2 e^t + te^t$.

17. $xy'' = y' \ln \frac{y'}{x}$ tenglama tartibini pasaytirishdan hosil qilingan tenglamani ko‘rsating

✓ $p' = \frac{p}{x} \ln \frac{p}{x}$

18. Tenglamani yeching: $x'' + 2x' + x = t$,
 $x(0) = 0, x'(0) = 0$.

✓ $x(t) = 2e^{-t} + te^t + t - 2$.

19. Ushbu $y' + \frac{y}{3} = \frac{x+1}{3y^3}$ tenglamani qanday almashtirish yordamida yechish mumkin?

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

20. Aslning tasvirini toping: $f(t) = t + \frac{1}{2}e^{-t}$

✗ $F(p) = \frac{p^2 + 2p + 2}{2p^2(p-1)}$

Imtihon 1-курс Дифференциал тенгламалар фанидан якуний назорат-МТН1224

Talaba MO'MINOVА DURDONA BAXODIR QIZI

Guruh 650-20 KTo`

Boshlandi 07.07.2021 12:22

Tugadi 07.07.2021 13:00

To'g'ri 8

Foiz 40.0

1. Tenglamani yeching: $x''(t) + x(t) = 2 \cos t$,
 $x(0) = 0, x'(0) = -1$;

✗ $x(t) = t \sin t$.

2. Differensial tenglamalar sistemasini noma'lumlarni yo'qotish usulida yeching:

$$\begin{cases} y' = 2y + z \\ z' = 3y \end{cases}$$

✗ $\begin{cases} y(x) = C_1 e^x + C_2 e^{-3x} \\ z(x) = 3C_1 e^x - C_2 e^{-3x} \end{cases}$

3. Tenglananing tipini aniqlang: $y' = f_1(x)f_2(y)$

✓ O'zgaruvchilari ajraladigan

4. 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.

✓ $\begin{cases} C'_1 y_1 + C'_2 y_2 = 0 \\ C'_1 y'_1 + C'_2 y'_2 = f(x) \end{cases}$

5. Ushbu $y'' + y = 4ctgx$ differensial tenglamani o'zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani aniqlang.

✗
$$\begin{cases} C_1'(x) \cos x + C_2'(x) \sin x = 0 \\ C_1'(x) \sin x - C_2'(x) \cos x = 4 \operatorname{ctgx} x \end{cases}$$

6. $y' = \frac{a_1 x + b_1 y + c_1}{a_2 x + b_2 y + c_2}$ tenglama qachon o'zgaruvchilari ajraladigan differensial tenglamaga keladi?

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

7. Tenglamani yeching: $x'' + 2x' + x = t^2$,
 $x(0) = 1, x'(0) = 0$.

✓ $x(t) = t^2 - 4t + 6 - 5e^{-t} - te^{-t}$.

8. Fundamental yechimlari sistemasi $y_1 = e^{-2x}, y_2 = e^{-3x}$ bo'lgan chiziqli bir jinsli differensial tenglama tuzing.

✓ $y'' + 5y' + 6y = 0$

9. Differensial tenglamani xususiy yechimini toping $2\sqrt{y}dx - dy = 0, y(0) = 1$

✗ $y = 2x + 1$

10. $y'' = e^x$ tenglamaning umumiy yechimini toping

✓ $y = e^x + C_1x + C_2$

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

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

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

✓ birinchi tartibli

13. $y''' = x$ tenglananing umumiy yechimini toping

✗ Javob belgilanmagan

14. Differensial tenglamani yeching. $y' + \frac{2y}{x} = x^3$

✗ $y = \frac{C}{x^2}$

15. Quyidagilardan qaysi biri to‘la differensial tenglama bo‘la olmaydi?

✗ $(y - \sin x)dx + (x - \cos y)dy = 0.$

16. Aslning tasvirini toping: $f(t) = 2 \sin t - \cos t$

✗ $F(p) = \frac{2-p}{p^2-1}$

17. $y'' - 4y' - 5y = x$ tenglamaning umumiy yechimini toping?

✓ $y = C_1 e^{-x} + C_2 e^{5x} - \frac{1}{5}x + \frac{4}{25}$

18. $y'' - y = 0$ tenglamaning $y(0) = 0$, $y'(0) = 2$ boshlang'ich shartlarni qanoatlantiruvchi yechimini toping

✗ $y = 2e^x - e^{-x}$

19. Tenglamani yeching: $x'' + 2x' + x = t$,
 $x(0) = 0, x'(0) = 0$.

✗ $x(t) = 2e^{-t} + te^t + t + 2$.

20. Ushbu sistema $\begin{cases} C'_1(x)e^x + C'_2(x)xe^x = 0 \\ C'_1(x)e^x + C'_2(x)(1+x)e^x = \frac{e^x}{x} \end{cases}$ qaysi differensial tenglamani o'zgarmasni variatsiyalash usulida yechish uchun tuzilgan?

✓ $y'' - 2y' + y = \frac{e^x}{x}$

Talaba	MAMARASULOVA SARVINOZ ABDUMANSUR QIZI
Guruh	650-20 KTo`
Boshlandi	07.07.2021 12:16
Tugadi	07.07.2021 13:00
To'g'ri	10
Foiz	50.0

1. Tenglamani yeching: $x' + x = e^t$, $x(0) = 0$

✗ Yechimga ega emas

2. $y'' = \cos^2 x$ tenglamaning $y(0) = \frac{1}{32}$, $y'(0) = 0$, $y''(0) = \frac{1}{8}$, $y'''(0) = 0$ shartlarni qanoatlantiruvchi yechimini toping

✓ $y = \frac{1}{48}x^4 + \frac{1}{8}x^2 + \frac{1}{32}\cos 2x$

3. Tasvirning asl funksiyasi topilsin: $F(p) = \frac{p}{(p^2 - 1)^2}$

✗ $f(t) = t \cdot sht$

4. Tenglamaning tipini aniqlang: $xy' + y = x \ln x$.

✗ Bir jinsli differensial tenglama

5. $y' = \frac{a_1x + b_1y + c_1}{a_2x + b_2y + c_2}$ tenglama qachon o‘zgaruvchilari ajraladigan differensial tenglamaga keladi?

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

6. Quyida shartlardan qaysi biri bajarilsa $y' = f(x, y)$ tenglama nolinchi tartibli bir jinsli differernsial tenglama bo‘ladi?

✓ $f(\lambda x, \lambda y) = f(x, y)$

7. Tasvirning asl funksiyasi topilsin: $F(p) = \frac{e^{-2p}}{p^2 - 9}$

✓ $f(t) = \frac{1}{3} \sinh(3t - 6)$.

8. Differensial tenglamani yeching: $y' - \frac{2y}{x} = x^2 e^x$

✗ $y = Cx^2 + xe^x$

9. Chiziqli differensial tenglamani qaysi usulda yechiladi?

✓ Bernulli

10. Aslning tasvirini toping: $f(t) = \cos \omega t$

✓ $F(p) = \frac{p}{p^2 + \omega^2}$

11. $y'' - y' - 2y = 0$ tenglamaning $y(0) = 0$ va $y'(0) = 3$ boshlang‘ich shartni qanoatlantiruvchi yechimini toping

✓ $y = e^{2x} - e^{-x}$

12. Quyidagi tenglamalardan qaysi birini tartibini pasaytirib bo'lmaydi?

✓ $y'' - 2y' - 3y = e^{4x}$

13. Quyidagilarni qaysi biri bir jinsli differnsial tenglama?

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

14. Aslning tasvirini toping: $f(t) = t + \frac{1}{2}e^{-t}$

✗ $F(p) = \frac{p^2 + 2p + 2}{2p^2(p - 1)}$

15. $xy'' = y' \ln \frac{y'}{x}$ tenglama tartibini pasaytirishdan hosil qilingan tenglamani ko'rsating

✓ $p' = \frac{p}{x} \ln \frac{p}{x}$

16. Rikkati tenglamasini aniqlang

✓ $y' = a(x)y^2 + b(x)y + c(x)$

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

✗ $y = C_1 e^x + \left(C_2 + \frac{x}{2} \right) e^{-x}$

18. O'zgaruvchilari ajraladigan differensial tenglamani aniqlang.

✓ $(1+e^{2x})ydx = e^x dy$

19. Aslning tasvirini toping: $f(t) = te^{ta}$

✓ $F(p) = \frac{1}{(p-a)^2}$

20. $y'''(x-1) - y'' = 0$ tenglamada qanday almashtirish bajariladi?

✓ $p = y'', \quad p' = y'''$

Imtihon 1-курс Дифференциал тенгламалар фанидан якуний назорат-МТН1224

Talaba JABBOROV KOMILJON UTKIR O'G'LI

Guruh 650-20 KTo`

Boshlandi 07.07.2021 12:06

Tugadi 07.07.2021 12:53

To'g'ri 13

Foiz 65.0

1. $y'' - 4y' + 13y = 0$ tenglananing fundamental yechimlari sistemasini toping

✗ $y_1 = e^{3x} \cos 2x,$
 $y_2 = e^{3x} \sin 2x$

2. Quyidagilardan qaysi biri o'ng tomoni maxsus ko'rinishda bo'lgan differensial tenglama bo'la olmaydi va u o'zgarmasni variatsiyalash usulida yechiladi?

✗ $y''' - y' = 2e^x + \cos x.$

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

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

4. $y'' - y = 0$ tenglananing umumi yechimini toping

✓ $y = C_1 e^x + C_2 e^{-x}$

5. Noma'lumlarni yo'qotish usulida Koshi masalasini yeching:

$$\begin{cases} x' = -y + 2 \\ y' = x + 1, \end{cases} \quad x(0) = -1, y(0) = 0.$$

✓ $\begin{cases} x(t) = 2 \sin t - 1 \\ y(t) = -2 \cos t + 2 \end{cases}$

6. Ushbu $y' = \frac{x-2y-3}{x+y}$ tenglamani bir jinsliga keltirish uchun qanday almashtirish bajariladi?

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

7. Aslning tasvirini toping: $f(t) = \sin 4t$

✓ $F(p) = \frac{4}{p^2 + 16}$

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

✗ $y = e^{-x} + \frac{x^3}{6} + C_1$

9. Fundamental yechimlari sistemasi $y_1 = e^{-2x}$, $y_2 = e^{-3x}$ bo'lgan chiziqli bir jinsli differensial tenglama tuzing.

✓ $y'' + 5y' + 6y = 0$

10. Agar noma'lum funksiya faqat bitta o'zgaruvchiga bog'liq bo'lsa, bunday differensial tenglamaga ... differensial tenglama deyiladi

✓ oddiy

11. $9y'' + y = 0$ tenglamaning $y\left(\frac{3\pi}{2}\right) = 2$, $y'\left(\frac{3\pi}{2}\right) = 0$, boshlang‘ich shartlarni qanoatlantiruvchi yechimini toping

✗

12. Differensial tenglamani yeching:

✓

13. Chiziqli differensial tenglamani qaysi usulda yechiladi?

✓ Lagranj

14. tenglamaning umumiyl yechimini toping

✓

15. Ushbu $y'' + y = 4ctgx$ differensial tenglamani o‘zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani aniqlang.

✓
$$\begin{cases} C_1'(x)\cos x + C_2'(x)\sin x = 0 \\ -C_1'(x)\sin x + C_2'(x)\cos x = 4ctgx \end{cases}$$

16. Ushbu $y'' + 2y' - 3y = xe^{3x}$ differensial tenglamani o‘zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani aniqlang.

✗

17. Aslning tasvirini toping: $f(t) = \cos \omega t$

✗

18. Quyidagilarni qaysi biri chiziqli tenglamaning umumiy ko‘rinishi?

✓ $y' + P(x)y = Q(x)$

19. Quyidagilardan qaysi biri birinchi tartibli differensial tenglama uchun Koshi masalasi bo‘ladi?

✗ $\begin{cases} y' = f(x, y) \\ y(a) = A; y(b) = B \end{cases}$

20. Chiziqli differensial tenglamani yeching: $y' - \frac{3y}{x} = x$

✓ $y = Cx^3 - x^2$

Imtihon 1-курс Дифференциал тенгламалар фанидан якуний назорат-МТН1224

Talaba MAXMUDOVA MARJONA SHERALI QIZI

Guruh 650-20 KTo`

Boshlandi 07.07.2021 12:05

Tugadi 07.07.2021 12:50

To'g'ri 13

Foiz 65.0

1. Aslning tasvirini toping: $f(t) = \sin^2 t$

✓ $F(p) = \frac{2}{p(p^2 + 4)}$

2. Differensial tenglamalar sistemasini noma'lumlarni yo'qotish usulida yeching:

$$\begin{cases} x' = 3y, & x(0) = 0 \\ y' = 3x, & y(0) = 1 \end{cases}$$

✓ $\begin{cases} x(t) = sh3t \\ y(t) = ch3t \end{cases}$

3. Differensial tenglamani yeching: $y' + y = 5$

✓ $y = 5 + Ce^{-x}$

4. $y'' + 9y = 0$ tenglamaning $y(0) = 0$, $y'\left(\frac{\pi}{4}\right) = -3$, boshlang'ich shartlarni qanoatlantiruvchi yechimini toping

✗

5. tenglamada qanday bo'lsa, chiziqli bir jinsli tenglama deyiladi?

✓

6. Bir jinsli differensial tenglama uchun Koshi masalasi aniqlang



7. Ushbu tenglamani qanday almashtirish yordamida chiziqli tenglamaga olib kelinadi?



8. Ushbu tenglamaning umumiy yechimini toping?



9. $y' = \frac{2xy}{x^2 - y^2}$ differensial tenglamani yeching

✓ $x^2 + y^2 = Cy$

10. Laplas almashtirishini aniqlang:



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

✗ *Javob belgilanmagan*

12. $y'' - 10y' + 25y = 0$ tenglamaning $y(0) = 0$, $y'(0) = 1$, boshlang'ich shartlarni qanoatlantiruvchi yechimini toping

✓ $y = xe^{5x}$

13. Quyida shartlardan qaysi biri bajarilsa $y' = f(x, y)$ tenglama nolinchi tartibli bir jinsli differensial tenglama bo‘ladi?

✓ $f(\lambda x, \lambda y) = f(x, y)$

14. tenglamaning umumiy yechimini toping

✗

15. tenglamaning umumiy yechimini toping

✓

16. Differensial tenglamalar sistemasini noma'lumlarni yo'qotish usulida yeching:

$$\begin{cases} y' = 2y + z \\ z' = 3y \end{cases}$$

✗ Javob belgilanmagan

17. $y'' - 4y' + 13y = 0$ tenglamaning fundamental yechimlari sistemasini toping

✓ $y_1 = e^{2x} \cos 3x,$

$y_2 = e^{2x} \sin 3x$

18. O‘zgaruvchilari ajraladigan differensial tenglamani aniqlang.

✓ $(1+e^{2x})ydx = e^x dy$

19. $y'' = e^{-x}$ tenglamaning $y(0) = 1$, $y'(0) = 0$ shartni qanoatlantiruvchi yechimini toping



20. Differensial tenglamani yeching. $y' + \frac{2y}{x} = x^3$

✓ $y = \frac{x^4}{6} + \frac{C}{x^2}$

Imtihon 1-курс Дифференциал тенгламалар фанидан якуний назорат-МТН1224

Talaba ZAYLIDDINOV ISMOILJON ISROILJON O'G'LΙ

Guruh 650-20 KTo`

Boshlandi 07.07.2021 12:06

Tugadi 07.07.2021 13:01

To'g'ri 15

Foiz 75.0

1. Quyidagilarning qaysi biri 1-tartibli chiziqli differensial tenglama?

✗ $y' + x \sin y + 5 = 0$

2. Differensial tenglamani yeching: $y' - 2xy = -2x$
 $y(0) = 3$

✓ $y = 1 + 2e^{x^2}$

3. Quyidagilarni qaysi biri bir jinsli differensial tenglananining ko‘rinishini ifodalash

✗ $y' = \varphi(x)\psi(y)$

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

✗ uchinchi tartibli

5. Tenglananining tipini aniqlang: $y^2 \frac{\partial z}{\partial x} + xy \frac{\partial z}{\partial y} = 0$

✗ chiziqli

6. $y'' = xe^{-x}$ tenglananining $y(0) = 1$, $y'(0) = 0$ shartni qanoatlantiruvchi yechimini toping

✗ $y = (x+2)e^{-x} + 1$

7. Rikkati tenglamarasini aniqlang

✗ $y'' + P(x)y + Q(x)y^2 = F(x)$

8. Tenglamani yeching: $x' + 2x = \sin t$, $x(0) = 0$.

✓ $x(t) = \frac{e^{-2t} - \cos t + 2 \sin t}{5}$.

9. $1 + y'^2 = y y''$ tenglamada qanday almashtirish bajariladi?

✓ $y' = p$, $y'' = p \frac{dp}{dy}$

10. $y'' - 4y' + 13y = 0$ tenglamaning umumiy yechimini toping

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

11. Ushbu $y'' - 3y' + 2y = xe^{3x}$ differensial tenglamani o'zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani aniqlang.

✗ $\begin{cases} C'_1(x)e^x + C'_2(x)e^{-3x} = 0 \\ C'_1(x)e^x + 3C'_2(x)e^{-3x} = xe^{3x} \end{cases}$

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

✗ Rikatti

13. $y'' - 7y' + 6y = 0$ tenglamaning umumiy yechimini toping.

✓ $y = C_1 e^{6x} + C_2 e^x$

14. $4y'' - y = x^3 - 24x$ tenglamaning umumiy yechimini toping.

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

15. Ushbu $y' + P(x)y = Q(x)y^n$ ko'rinishdagi tenglama qanday nomlanadi?

✓ Bernulli tenglamasi

16. Aslning tasvirini toping: $f(t) = e^{2t} \sin t$

✗ $F(p) = \frac{1}{(p-2)^2 - 1}$

17. Aslning tasvirini toping: $f(t) = \sin 4t$

✓ $F(p) = \frac{4}{p^2 + 16}$

18. Tenglamani yeching: $x'' - 4x' + 3x = 3,$
 $x(0) = 0, x'(0) = 1$

✗ $x(t) = \frac{1}{2}t^2 - 1 + \cos t.$

19. $y'' + 9y = 0$ tenglamaning $y(0) = 0$, $y'\left(\frac{\pi}{4}\right) = -3$, boshlang'ich shartlarni qanoatlantiruvchi yechimini toping

✗ $y = \sqrt{3} \sin 3x$

20. $(1 - x^2)y'' - xy' = 2$ tenglamada qanday almashtirish bajariladi?

✗ $y' = p, y'' = p \frac{dp}{dy}$

Imtihon 1-курс Дифференциал тенгламалар фанидан якуний назорат-МТН1224

Talaba USMONQULOV OTABEK ULUG'BEK O'G'LI

Guruh 650-20 KTo`

Boshlandi 07.07.2021 11:50

Tugadi 07.07.2021 12:35

To'g'ri 7

Foiz 35.0

1. Differensial tenglamani yeching: $y' - \frac{y}{x} = -\frac{12}{x^3}$

✗ $y = \frac{4}{x + C}$

2. Tenglamani yeching: $x'' + 2x' + x = \sin t$,
 $x(0) = 0, x'(0) = -1$

✓ $x(t) = \frac{1}{2}(e^{-t} - t e^{-t} - \cos t)$.

3. Tenglamaning tipini aniqlang: $y' - \frac{y}{x} = x + 1$

✓ Chiziqli differensial tenglama

4. Aslning tasvirini toping: $f(t) = t$

✗ $F(p) = -\frac{e^{-p}}{p^2}$

5. Ushbu sistema $\begin{cases} C'_1(x)e^x + C'_2(x)x e^x = 0 \\ C'_1(x)e^x + C'_2(x)(1+x)e^x = \frac{e^x}{x} \end{cases}$ qaysi differensial tenglamani o'zgarmasni variatsiyalash usulida yechish uchun tuzilgan?

✗ $y'' + y = \frac{e^x}{x}$

6. Differensial tenglamani yeching. $y' + \frac{2y}{x} = x^3$

✗ $y = Cx^2$

7. Qaysi almashtirish ushbu $y' = \frac{1-3x-3y}{1+x+y}$ tenglamani o‘zgaruvchilari ajraladigan tenglamaga keltiradi?

✓ $1+x+y = u$

8. $y'' + 25y = 0$ tenglananining umumi yechimini toping

✓ $y = C_1 \cos 5x + C_2 \sin 5x$

9. Quyidagilarni qaysi biri bir jinsli differensial tenglananining ko‘rinishini ifodalash

✓ $y' = \varphi\left(\frac{y}{x}\right)$

10. $y'' = xe^{-x}$ tenglananing $y(0) = 1$, $y'(0) = 0$ shartni qanoatlantiruvchi yechimini toping

✓ $y = (x+2)e^{-x} + x - 1$

11. Quyida shartlardan qaysi biri bajarilsa $y' = f(x, y)$ tenglama nolinchi tartibli bir jinsli differensial tenglama bo‘ladi?

✓ $f(\lambda x, \lambda y) = f(x, y)$

12. $y'' - y' - 2y = 0$ tenglamaning xarakteristik tenglamasi va umumiy yechimi to‘g‘ri ko‘rsatilgan qatorni aniqlang

✓ $k^2 - k - 2 = 0,$
 $y = C_1 e^{-x} + C_2 e^{2x}$

13. $y'' - 4y' + 3y = e^{3x}$ tenglamaning umumiy yechimini toping

✗ $y = C_1 e^x + \left(C_2 - \frac{x}{3} \right) e^{3x}$

14. $y'' - 4y' + 13y = 0$ tenglamaning fundamental yechimlari sistemasini toping

✓ $y_1 = e^{2x} \cos 3x,$
 $y_2 = e^{2x} \sin 3x$

15. Tenglamani yeching: $x'' + 2x' + x = t,$
 $x(0) = 0, x'(0) = 0.$

✓ $x(t) = 2e^{-t} + te^t + t - 2.$

16. Tenglamani yeching: $x' - x = 1, x(0) = -1.$

✓ $x(t) = -1.$

17. $4y'' - y = x^3 - 24x$ tenglamaning umumiylarini toping.

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

18. $y'' - 10y' + 25y = 0$ tenglamaning $y(0) = 0, y'(0) = 1$, boshlang'ich shartlarni qanoatlantiruvchi yechimini toping

✓ $y = xe^{5x}$

19. Tenglamani yeching: $y''(t) - 6y'(t) + 9y(t) = 0$.
 $y(0) = A, y'(0) = B$.

✗ $y(t) = (B - 3A)e^{-3t} + Ae^{-3t}$

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

✓ birinchi tartibli

Imtihon 1-курс Дифференциал тенгламалар фанидан якуний назорат-МТН1224

Talaba O'RAZALIYEV EZOZBEK XIDIRBOY O'G'LII

Guruh 650-20 KTo`

Boshlandi 07.07.2021 11:26

Tugadi 07.07.2021 12:10

To'g'ri 14

Foiz 70.0

1. Quyidagilardan qaysi biri birinchi tartibli differensial tenglama uchun Koshi masalasi bo‘ladi?

✓
$$\begin{cases} y' = f(x, y) \\ y(x_0) = y_0 \end{cases}$$

2. Tenglamani yeching: $x'' + 4x = t$,
 $x(0) = 1, x'(0) = 0$.

✓ $x(t) = \frac{1}{4}t + \cos 2t - \frac{1}{8}\sin 2t.$

3. $y'' + y' = x$ tenglananing umumiy yechimini toping

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

4. Quyidagilarning qaysi biri 1-tartibli chiziqli differensial tenglananing umumiy ko‘rinishi?

✓ $y' + p(x) \cdot y + q(x) = 0$

5. Ushbu $y'' + 2y' = 3\sin 2x$ differensial tenglamani o‘zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani aniqlang.

✓
$$\begin{cases} C'_1(x) + C'_2(x)e^{-2x} = 0 \\ -2C'_2(x)e^{-2x} = 3\sin 2x \end{cases}$$

6. Tasvirning siljish teoremasini aniqlang:

✓ $e^{\alpha t} f(t) \doteq F(p - \alpha)$

7. $y'''(x-1) - y'' = 0$ tenglamada qanday almashtirish bajariladi?

✓ $p = y'', \quad p' = y'''$

8. Ushbu $y' + P(x)y = Q(x)y^n$ ko'rinishdagi tenglama qanday nomlanadi?

✓ Bernulli tenglamasi

9. Qaysi almashtirish ushbu $y' = \frac{1-3x-3y}{1+x+y}$ tenglamani o'zgaruvchilari ajraladigan tenglamaga keltiradi?

✓ $1+x+y = u$

10. $9y'' + y = 0$ tenglamaning $y\left(\frac{3\pi}{2}\right) = 2, \quad y'\left(\frac{3\pi}{2}\right) = 0$, boshlang'ich shartlarni qanoatlantiruvchi yechimini toping

✓ $y = 2 \sin \frac{x}{3}$

11. Tenglamani yeching: $x' - x = 1, x(0) = -1.$

✓ $x(t) = -1.$

12. Aslning tasvirini toping: $f(t) = \sin 4t$

✓ $F(p) = \frac{4}{p^2 + 16}$

13. $y''' - 5y'' + 4y = 0$ tenglamaning xarakteristik tenglamasi ildizlarini toping

✓ $k_1 = -1, k_2 = 1,$
 $k_3 = -2, k_4 = 2$

14. Quyidagi tenglamalardan qaysi birini tartibini pasaytirib bo'lmaydi?

✓ $y'' - 2y' - 3y = e^{4x}$

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

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

16. Tasvirning asl funksiyasi topilsin: $F(p) = \frac{p+1}{p^2 - 2p + 5}$

✓ $f(t) = e^t (\cos 2t + \sin 2t)$

17. Tenglamani yeching: $x'' - 2x' = e^{2t}$,
 $x(0) = x'(0) = 0$.

✓ $x(t) = \frac{1}{4} (1 - e^{2t} + 2te^{2t})$.

18. $y'' - 2y' + y = x^2$ tenglananing umumi yechimini toping.

✓ $y = (C_1 + C_2 x)e^x +$
 $+ x^2 + 4x + 6$

19. Ushbu sistema $\begin{cases} C'_1(x)e^x + C'_2(x)e^{2x} = 0 \\ C'_1(x)e^x + 2C'_2(x)e^{2x} = xe^{3x} \end{cases}$ qaysi differensial tenglamani o'zgarmasni variatsiyalash usulida yechish uchun tuzilgan?

✓ $y'' - 3y' + 2y = xe^{3x}$

1) $y'' - 2y' - 3y = e^{4x}$;

2) $xy'' = y' \ln \frac{y'}{x}$;

3) $y'''(x-1) - y'' = 0$;

4) $1 + y'^2 = y y''$

✗ 2), 4)

Imtihon 1-курс Дифференциал тенгламалар фанидан якуний назорат-МТН1224

Talaba ABDUVALIYEV SAMANDAR BAXROM O'G'LII

Guruh 310-20 Dlo'

Boshlandi 07.07.2021 11:30

Tugadi 07.07.2021 12:16

To'g'ri 19

Foiz 95.0

1. Tenglamani yeching: $x'' + x = 1$,
 $x(0) = -1, x'(0) = 0$.

✓ $x(t) = 1 - 2 \cos t$.

2. $y''' - 2y'' + y' = 0$ tenglamaning umumiyligini yechimini toping

✓ $y = C_1 + C_2 e^x + C_3 x e^x$

3. Aslning tasvirini toping: $f(t) = e^{2t} \sin t$

✓ $F(p) = \frac{1}{(p-2)^2 + 1}$

4. Quyida shartlardan qaysi biri bajarilsa $y' = f(x, y)$ tenglama nolinchi tartibli bir jinsli differensial tenglama bo'ladi?

✓ $f(\lambda x, \lambda y) = f(x, y)$

5. Differensial tenglamani yeching: $y' + 2y = 3e^x$

✓ $y = Ce^{-2x} + e^x$

6. $y' + P(x)y = Q(x)$ tenglamasini yechishning Bernulli usulida umumiyligini yechim ... ko'rinishda izlanadi

✓ $y = uv$

7. $y'' - 4y' + 13y = 0$ tenglamaning fundamental yechimlari sistemasini toping

✓ $y_1 = e^{2x} \cos 3x,$

$y_2 = e^{2x} \sin 3x$

8. Chiziqli differensial tenglamani yeching: $y' - \frac{3y}{x} = x$

✓ $y = Cx^3 - x^2$

9. Laplas almashtirishini aniqlang:

✓ $F(p) \doteq \int_p^\infty e^{-pt} f(t) dt$

10. $y''' - 5y'' + 4y = 0$ tenglamaning xarakteristik tenglamasi ildizlarini toping

✓ $k_1 = -1, \quad k_2 = 1,$

$k_3 = -2, \quad k_4 = 2$

11. Tenglamani yeching: $x' + x = e^{-t}, x(0) = 1.$

✓ $x(t) = (t+1)e^{-t}$.

12. Chiziqli differensial tenglamani yeching: $y' + \frac{2y}{x} = \frac{e^{-x^2}}{x}$

✓ $y = \frac{C - e^{-x^2}}{2x^2}$

13. Aslning tasvirini toping: $f(t) = t$

✓ $F(p) = \frac{1}{p^2}$

14. Differensial tenglamani yeching:
 $y' - 2xy = -2x$
 $y(0) = 3$

✓ $y = 1 + 2e^{x^2}$

15. Fundamental yechimlari sistemasi $y_1 = e^{2x}$, $y_2 = e^{3x}$ bo‘lgan chiziqli bir jinsli differensial tenglama tuzing.

✓ $y'' - 5y' + 6y = 0$

16. $y'' - 4y' - 5y = x$ tenglananining umumiy yechimini toping?

✗ $y = C_1 e^{3x} + C_2 e^{-x} - \frac{1}{5}x + \frac{4}{25}$

17. Quyidagi tenglama uchun integralovchi ko‘paytuvchi qanday bo‘ladi:

$$(x^2 - y)dx + (x^2 y^2 + x)dy = 0$$

✓ $\mu(x) = \frac{1}{x^2}$

18. 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

19. $y'' - y = \sin x$ tenglamaning umumiyligini yechimini toping?

✓ $y = C_1 e^{-x} + C_2 e^x - \frac{1}{2} \sin x$

20. Ushbu $y' = \frac{x-2y-3}{x+y}$ tenglamani bir jinsliga keltirish uchun qanday almashtirish bajariladi?

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

Talaba BOBOYEV SAIDMUHAMMAD DAVLATBOYEVICH

Guruh 120-20 ETo'

Boshlandi 07.07.2021 11:00

Tugadi 07.07.2021 11:45

To'g'ri 19

Foiz 95.0

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

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

2. $y'' - 4y' + 13y = 0$ tenglananing fundamental yechimlari sistemasini toping

✓ $y_1 = e^{2x} \cos 3x,$
 $y_2 = e^{2x} \sin 3x$

3. $y' = \frac{y}{x-y}$ differensial tenglamani yeching.

✓ $\ln y + \frac{x}{y} = C$

4. Fundamental yechimlari sistemasi $y_1 = e^{2x}, \quad y_2 = e^{3x}$ bo'lgan chiziqli bir jinsli differensial tenglama tuzing.

✓ $y'' - 5y' + 6y = 0$

5. $y''' - 2y'' + y' = 0$ tenglananing umumiyl yechimini toping

✓ $y = C_1 + C_2 e^x + C_3 x e^x$

6. $4y'' - y = x^3 - 24x$ tenglananing umumiyl yechimini toping.

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

7. Qaysi bir tenglamada $z = y^{-1}$ almashtirish orqali chiziqli differensial tenglama hosil qilinadi:

1) $(y - y^2)dx - (x - 1)dy = 0$

2) $y' - 2ytgx + y^2 \sin^2 x = 0$

3) $xy + y^2 = (2x^2 + xy)y'?$

✗ Faqat 2)

8. Quyidagilarni qaysi biri chiziqli differnsial tenglamani yechishning almashtirishi hisoblanadi

✓ $y = u(x) \cdot v(x)$

9. $F(y, y', y'', \dots, y^{(n)}) = 0$ tenglananining tartibini pasaytirish uchun qanday almashtirish bajariladi?

✓ $y' = p, \quad y'' = p \frac{dp}{dy}, \dots,$

10. Tasvirning asl funksiyasi topilsin: $F(p) = \frac{p+1}{p^2 - 2p + 5}$

✓ $f(t) = e^t (\cos 2t + \sin 2t)$

11. $y'' - y = xe^x$ tenglananing umumiy yechimini toping

✓ $y = C_1 e^{-x} + \left(C_2 + \frac{x^2 - x}{4} \right) e^x$

12. Fundamental yechimlari sistemasi $y_1 = e^x \cos 3x$, $y_2 = e^x \sin 3x$ bo'lgan chiziqli bir jinsli differensial tenglama tuzing.

✓ $y'' - 2y' + 10y = 0$

13. Erkli o'zgaruvchi, noma'lum funksiya va uning hosilalari yoki differensiallarini bog'lovchi tenglamaga ... deyiladi.

✓ differensial tenglama

14. Differensial tenglamani yeching: $y' + y = 5$

✓ $y = 5 + Ce^{-x}$

15. $y'' - 5y = \sin 5x$ tenglananining umumiyl yechimini toping

✓
$$y = C_1 e^{-\sqrt{5}x} + C_2 e^{\sqrt{5}x} - \frac{1}{30} \sin 5x$$

16. $y'''(x-1) - y'' = 0$ tenglamada qanday almashtirish bajariladi?

✓ $p = y'', \quad p' = y'''$

17. Tenglamani umumi yechimini toping $y' = 2x + y$

✓ $y = Ce^x - 2x - 2$

18. $y'' = xe^{-x}$ tenglamaning $y(0) = 1, y'(0) = 0$ shartni qanoatlantiruvchi yechimini toping

✓ $y = (x + 2)e^{-x} + x - 1$

19. $y'' + y = 0$ tenglamaning $y\left(\frac{\pi}{2}\right) = 1, y'\left(\frac{\pi}{3}\right) = 0$ boshlang'ich shartlarni qanoatlantiruvchi yechimini toping

✓ $y = \sin x + \frac{1}{\sqrt{3}} \cos x$

20. $x^2 y' = y^2 + xy$ differensial tenglamani yeching

✓ $y = \frac{x}{C - \ln|x|}$

Imtihon 1-курс Дифференциал тенгламалар фанидан якуний назорат-МТН1224

Talaba RAUFOVA MADINAXON G'ULOMJON QIZI

Guruh 120-20 ETo'

Boshlandi 07.07.2021 12:05

Tugadi 07.07.2021 12:50

To'g'ri 19

Foiz

95.0

1. Tenglamani yeching: $x'' - 2x' + 2x = 1$,
 $x(0) = x'(0) = 0$.

✗ $x(t) = \frac{1}{2}(1 - e^t \cos t)$.

2. $y'' + 4y' = 2$ tenglamaning umumi yechimini toping

✓ $y = C_1 + C_2 e^{-4x} + \frac{x}{2}$

3. O'xhashlik teoremasini aniqlang:

✓ $f(\alpha t) \leftarrow \frac{1}{\alpha} F\left(\frac{p}{\alpha}\right)$

4. $y'' - y' - 2y = 0$ tenglamaning $y(0) = 0$ va $y'(0) = 3$ boshlang'ich shartni qanoatlantiruvchi yechimini toping

✗ $y = e^{2x} + e^{-x}$

5. O'zgaruvchilari ajraladigan differensial tenglamani aniqlang.

✗ $(x^2 - 2xy)dy = (xy - y^2)dx$.

6. $y''' = \cos x$ tenglamining umumi yechimini toping

✓ $y = -\sin x + \frac{C_1 x^2}{2} + C_2 x + C_3$

7. Quyidagi tenglama uchun integralovchi ko‘paytuvchi qanday bo‘ladi:

$$(x^2 - y)dx + (x^2 y^2 + x)dy = 0$$

✓ $\mu(x) = \frac{1}{x^2}$

8. $4y'' - y = x^3 - 24x$ tenglamaning umumiy yechimini toping.

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

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

✓ birinchi tartibli

10. Tenglamani yeching: $x' - x = 1, x(0) = -1$.

✓ $x(t) = -1$.

11. Quyidagilardan qaysi biri to‘la differensial tenglamaning umumiy yechimi bo‘ladi?

✓ $\int\limits_{x_0}^x M(x, y)dx + \int\limits_{y_0}^y N(x_0, y)dy = C$

12. Differensial tenglamani yeching: $y' + 2y = 3e^x$

✓ $y = Ce^{-2x} + e^x$

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

✓ $y = \frac{1}{24}x^4 + \frac{1}{2}C_1x^2 + C_2x + C_3$

14. Klero tenglamasini aniqlang

✓ $y = xy' + \psi(y')$

15. $y'' - y' - 2y = 0$ tenglamaning xarakteristik tenglamasi va umumiy yechimi to‘g‘ri ko‘rsatilgan qatorni aniqlang

✓ $k^2 - k - 2 = 0,$
 $y = C_1e^{-x} + C_2e^{2x}$

16. $y'' - 10y' + 25y = 0$ tenglamaning $y(0) = 0, y'(0) = 1$, boshlang‘ich shartlarni qanoatlantiruvchi yechimini toping

✓ $y = xe^{5x}$

17. $y'' - 4y' + 3y = e^{3x}$ tenglamaning umumiy yechimini toping

✓ $y = C_1e^x + \left(C_2 + \frac{x}{2}\right)e^{3x}$

18. $y'' - y = \sin x$ tenglamaning umumiyligini toping?

✓ $y = C_1 e^{-x} + C_2 e^x - \frac{1}{2} \sin x$

19. Differensial tenglamani yeching: $y' = \frac{y+1}{x+1}$

✓ $y = -1 + C(x+1)$

20. Tasvirning asl funksiyasi topilsin: $F(p) = \frac{e^{-2p}}{p^2 - 9}$

✗ $f(t) = \frac{1}{3} \sin(3t - 2)$.

Imtihon 1-курс Дифференциал тенгламалар фанидан якуний назорат-МТН1224

Talaba BEKNIYOZOVA SHAXODAT SHAVKATOVNA

Guruh 650-20 KTo`

Boshlandi 07.07.2021 11:02

Tugadi 07.07.2021 11:24

To'g'ri 16

Foiz 80.0

1. Differensial tenglamalar sistemasini noma'lumlarni yo'qotish usulida yeching:

$$\begin{cases} y' = 2y + z \\ z' = 3y + 4e^x \end{cases}$$

✓ $\begin{cases} y(x) = C_1 e^{-x} + C_2 e^{3x} - e^x \\ z(x) = -3C_1 e^{-x} + C_2 e^{3x} + e^x \end{cases}$

2. Bir jinsl differensial tenglamaga keltiriladigan differensial tenglamaning umumiy ko'rinishini toping

✓ $y' = \frac{a_1 x + b_1 y + c_1}{a_2 x + b_2 y + c_2}$

3. Quyidagi tenglama uchun integralovchi ko'paytuvchi qanday bo'ladi:

$$ydx - (x + y^2)dy = 0 ?$$

✓ $\mu(y) = \frac{1}{y^2}$

4. Tenglamani yeching: $x'' - 4x' + 3x = 3,$
 $x(0) = 0, x'(0) = 1$

✓ $x(t) = 1 - 2e^t + e^{3t}$

5. $y'' - 5y = \sin 5x$ tenglamaning umumiy yechimini toping

✓ $y = C_1 e^{-\sqrt{5}x} + C_2 e^{\sqrt{5}x} - \frac{1}{30} \sin 5x$

6. Tasvirning asl funksiyasi topilsin: $F(p) = \frac{1}{p^2(p^2+1)}$

✗ $f(t) = t \sin t$

7. $xy'' = y' \ln \frac{y'}{x}$ tenglama tartibini pasaytirishdan hosil qilingan tenglamani ko'rsating

✓ $p' = \frac{p}{x} \ln \frac{p}{x}$

8. Tenglamani yeching: $x' + 2x = \sin t$, $x(0) = 0$.

✓ $x(t) = \frac{e^{-2t} - \cos t + 2 \sin t}{5}$.

9. $4y'' - y = x^3 - 24x$ tenglanining umumi yechimini toping.

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

10. Chiziqli differensial tenglamani qaysi usulda yechiladi?

✓ Lagranj

11. Quyidagilardan qaysi biri o'ng tomoni maxsus ko'rinishda bo'lgan differensial tenglama bo'la olmaydi va u o'zgarmasni variatsiyalash usulida yechiladi?

✓ $y'' - 2y' + y = xe^{x^2}$

12. $y'' + 3y' = e^{-3x}$ tenglamaning umumiy yechimini toping

✗ $y = C_1 + \left(C_2 + \frac{x}{3} \right) e^{-3x}$

13. Qaysi bir formula noto'g'ri?

✓ $t \cdot f(t) \longleftarrow pF(p)$

14. Aslning tasvirini toping: $f(t) = \sin 4t$

✓ $F(p) = \frac{4}{p^2 + 16}$

15. $y'' - 4y' + 13y = 0$ tenglamaning umumiy yechimini toping

✓ $y = e^{2x} (C_1 \cos 3x + C_2 \sin 3x)$

16. $y'''' - 5y'' + 4y = 0$ tenglamaning xarakteristik tenglamasi ildizlarini toping

- ✓ $k_1 = -1, k_2 = 1,$
✓ $k_3 = -2, k_4 = 2$

17. $\frac{y}{y'} = \ln y$ differensial tenglamaning tipini aniqlang

✗ Bir jinsli

18. Differensial tenglamani yeching: $y' - 2xy = -2x$
 $y(0) = 3$

✓ $y = 1 + 2e^{x^2}$

19. Tasvirning asl funksiyasi topilsin: $F(p) = \frac{e^{-3p}}{p+2}$

✓ $f(t) = e^{-2(t-3)}\eta(t-3)$

20. Tenglamaning tipini aniqlang: $y' = f_1(x)f_2(y)$

✓ O'zgaruvchilari ajraladigan

Imtihon 1-курс Дифференциал тенгламалар фанидан якуний назорат-МТН1224

Talaba KARIMBERDIYEV AZIZBEK SHUXRAT O'G'LII

Guruh 120-20 ETo'

Boshlandi 07.07.2021 11:00

Tugadi 07.07.2021 11:40

To'g'ri 17

Foiz 85.0

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

✓ birinchi tartibli

2. $y'' + 3y' = e^{-3x}$ tenglamaning umumiy yechimini toping

✗ $y = C_1 + \left(C_2 - \frac{x}{3} \right) e^{3x}$

3. Differensial tenglamani yeching: $y' - \frac{2y}{x} = x^2 e^x$

✓ $y = x^2 (e^x + C)$

4. Tasvirning asl funksiyasi topilsin: $F(p) = \frac{e^{-3p}}{p+2}$

✓ $f(t) = e^{-2(t-3)} \eta(t-3)$

5. Quyidagi tenglamalarning qaysi biri o‘zgaruvchilari ajraladigan tenglama?

✓ $(1+x^2)dy + ydx = 0$

6. Tenglamaning tipini aniqlang: $y^2 \frac{\partial z}{\partial x} + xy \frac{\partial z}{\partial y} = 0$

✗ ikkinchi tartibli

7. $y'' + y''(x-1) - y'' = 0$ tenglama tartibini pasaytirganda hosil bo'lgan tenglamaning tartibini aniqlang

✓ 2

8. Ushbu $y' + P(x)y = Q(x)y^n$ Bernulli tenglamasini chiziqli tenglamaga keltirish uchun qanday almashtirish qo'llanadi?

✗
$$\begin{aligned} z &= y^{-n+1}, \\ z' &= (-n+1)y^{-n} \end{aligned}$$

9. $y'' + 9y = 0$ tenglamaning $y(0) = 0$, $y'\left(\frac{\pi}{4}\right) = -3$, boshlang'ich shartlarni qanoatlantiruvchi yechimini toping

✓ $y = \sqrt{2} \sin 3x$

10. Chiziqli differensial tenglamani yeching: $y' + \frac{2y}{x} = \frac{e^{-x^2}}{x}$

✓ $y = \frac{C - e^{-x^2}}{2x^2}$

11. $y''(x-1) - y'' = 0$ tenglamada qanday almashtirish bajariladi?

✓ $p = y'', \quad p' = y'''$

12. Aslning tasvirini toping: $f(t) = \sin 4t$

✓ $F(p) = \frac{4}{p^2 + 16}$

13. Quyidagilardan qaysi biri birinchi tartibli differensial tenglama uchun Koshi masalasi bo‘ladi?

✗ $\begin{cases} y' = f(x, y) \\ y(a) = A; y(b) = B \end{cases}$

14. Aslning tasvirini toping: $f(t) = \cos \omega t$

✓ $F(p) = \frac{p}{p^2 + \omega^2}$

15. Tenglamaning umumiy yechimini toping $y' = xy$

✓ $y = Ce^{\frac{x^2}{2}}$

16. $y'' - 2y' - 3y = e^{4x}$ tenglamaning umumiy yechimini toping

✓ $y = C_1 e^{3x} + C_2 e^{-x} + \frac{1}{5} e^{4x}$

17. Ushbu $y'' + 2y' - 3y = xe^{3x}$ differensial tenglamani o‘zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani aniqlang.

✓
$$\begin{cases} C'_1(x)e^x + C'_2(x)e^{-3x} = 0 \\ C'_1(x)e^x - 3C'_2(x)e^{-3x} = xe^{3x} \end{cases}$$

18. Klero tenglamasini aniqlang

✓ $y = xy' + \psi(y')$

19. Differensial tenglamani yeching: $y' - 2xy = e^{x^2}$

✓ $y = (x + C)e^{x^2}$

20. $\frac{y}{y'} = \ln y$ differensial tenglamaning tipini aniqlang

✓ O'zgaruvchilari ajraladigan

Imtihon 1-курс Дифференциал тенгламалар фанидан якуний назорат-МТН1224

Talaba SOBIROV SOHIB ZOKIR O'G'LII

Guruh 120-20 ETo'

Boshlandi 07.07.2021 12:21

Tugadi 07.07.2021 13:00

To'g'ri 16

Foiz 80.0

1. Ushbu $y' + P(x)y = Q(x)y^n$ ko'rinishdagi tenglama qanday nomlanadi?

✓ Bernulli tenglamasi

2. Differensial tenglamalar sistemasini noma'lumlarni yo'qotish usulida yeching:

$$\begin{cases} y' = z - 2y \\ z' = 3y \end{cases}$$

✓ $\begin{cases} y(x) = C_1 e^x + C_2 e^{-3x} \\ z(x) = 3C_1 e^x - C_2 e^{-3x} \end{cases}$

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

✓ $p = y', p' = y''$

4. Tenglamaning tipini aniqlang: $xy' + y = x \ln x$.

✓ Chiziqli differensial tenglama

5. Ushbu $y' + \frac{y}{3} = \frac{x+1}{3y^3}$ tenglamani qanday almashtirish yordamida yechish mumkin?

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

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

✓ $Q(x) \equiv 0$

7. Tenglamani yeching: $\begin{aligned} x'' + 2x' + x &= t, \\ x(0) &= 0, x'(0) = 0. \end{aligned}$

✓ $x(t) = 2e^{-t} + te^t + t - 2.$

8. Ushbu $y'' + 2y' - 3y = xe^{3x}$ differensial tenglamani o'zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani aniqlang.

✗ $\begin{cases} C_1'(x)e^x + C_2'(x)e^{-3x} = 0 \\ C_1'(x)e^x + 3C_2'(x)e^{-3x} = xe^{3x} \end{cases}$

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

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

10. $y' + P(x)y = Q(x)$ tenglamanini yechishning Bernulli usulida umumiyl yechim ... ko'rinishda izlanadi

✓ $y = uv$

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

✓ chiziqli bir jinsli

12. Differensial tenglamani yeching:

$$\begin{aligned} y' - 2xy &= -2x \\ y(0) &= 3 \end{aligned}$$

✓ $y = 1 + 2e^{x^2}$

13. $y'' + 3y' = e^{-3x}$ tenglamaning umumiy yechimini toping

✓ $y = C_1 + \left(C_2 - \frac{x}{3}\right)e^{-3x}$

14. Bir jinsl differensial tenglamaga keltiriladigan differensial tenglamaning umumiy ko'rinishini toping

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

15. $y'' - y' - 2y = 0$ tenglamaning xarakteristik tenglamasi va umumiy yechimi to'g'ri ko'rsatilgan qatorni aniqlang

✓ $k^2 - k - 2 = 0,$
 $y = C_1e^{-x} + C_2e^{2x}$

16. $y'' - 4y' + 13y = 0$ tenglamaning fundamental yechimlari sistemasini toping

✓ $y_1 = e^{2x} \cos 3x,$

$y_2 = e^{2x} \sin 3x$

17. $y'' - y' = \cos 2x$ tenglamaning umumiy yechimini toping

$y = C_1 + C_2 e^x -$

✓ $-\frac{1}{5} \cos 2x - \frac{1}{10} \sin 2x$

18. Quyidagi tenglamalarni qaysi biri Bernulli tenglamasi hisoblanadi:

✓ $y' + P(x)y = Q(x)y^\alpha$

19. $x^2y' = y^2 + xy$ differensial tenglamani yeching

✓ $y = \frac{x}{C - \ln|x|}$

20. Aslning tasvirini toping: $f(t) = t + \frac{1}{2}e^{-t}$

✓ $F(p) = \frac{p^2 + 2p + 2}{2p^2(p+1)}$

Imtihon	1-курс Дифференциал тенгламалар фанидан якуний назорат-MTH1224
Talaba	ABDUXALILOV ABDULAZIZ IKROMJON O'G'LI
Guruh	130-20 Rio'
Boshlandi	07.07.2021 11:23
Tugadi	07.07.2021 12:01
To'g'ri	19
Foiz	95.0

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

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

2. 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

3. $y'' + 5y' + 6y = 0$ tenglamaning $y(0) = 1, y'(0) = -6$, boshlang'ich shartlarni qanoatlantiruvchi yechimini toping

✓ $y = 4e^{-3x} - 3e^{-2x}$

4. Quyidagilardan qaysi biri birinchi tartibli differensial tenglama uchun Koshi masalasi bo'ladi?

✗ $\begin{cases} y' = f(x, y) \\ y(a) = A; y(b) = B \end{cases}$

5. Aslning tasvirini toping: $f(t) = \sin 4t$

✓ $F(p) = \frac{4}{p^2 + 16}$

6. $y'' = xe^{-x}$ tenglamaning $y(0) = 1$, $y'(0) = 0$ shartni qanoatlantiruvchi yechimini toping

✓ $y = (x + 2)e^{-x} + x - 1$

7. Klero tenglamasini aniqlang

✗ $y = x + \psi(y')$

8. Quyidagilarni qaysi biri bir jinsli differensial tenglamaning ko‘rinishini ifodalash

✓ $y' = \varphi\left(\frac{y}{x}\right)$

9. Tasvirning asl funksiyasi topilsin: $F(p) = \frac{p}{(p^2 - 1)^2}$

✓ $f(t) = \frac{1}{2}t \cdot \sin t$

10. Chiziqli differensial tenglamani yeching: $y' - \frac{3y}{x} = x$

✓ $y = Cx^3 - x^2$

11. $y'' - 3y' - 4y = e^{4x}$ tenglamaning umumiy yechimini toping

✓ $y = C_1 e^{-x} + \left(C_2 + \frac{x}{5}\right) e^{4x}$

12. $y'' - 7y' + 6y = 0$ tenglamaning umumiy yechimini toping.

✓ $y = C_1 e^{6x} + C_2 e^x$

13. Quyidagilarning qaysi biri 1-tartibli chiziqli differensial tenglamaning umumiy ko‘rinishi?

✓ $y' + p(x) \cdot y + q(x) = 0$

14. Lagranj tenglamasining ko‘rinishini aniqlang

✓ $y = x\varphi(y') + \psi(y')$

15. Aslning tasvirini toping: $f(t) = e^{2t} \sin t$

✓ $F(p) = \frac{1}{(p-2)^2 + 1}$

16. Ushbu $y' = \frac{x-2y-3}{x+y}$ tenglamani bir jinsliga keltirish uchun qanday almashtirish bajariladi?

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

17. Fundamental yechimlari sistemasi $y_1 = e^{2x}$, $y_2 = e^{3x}$ bo‘lgan chiziqli bir jinsli differensial tenglama tuzing.

✓ $y'' - 5y' + 6y = 0$

18. Differensial tenglamani yeching. $y' + \frac{2y}{x} = x^3$

✓ $y = \frac{x^4}{6} + \frac{C}{x^2}$

19. Tenglamani yeching: $x'' - 2x' + x = e^t$,
 $x(0) = 0, x'(0) = 1$.

✗ $x(t) = \frac{1}{2}t + te^t$.

20. Tenglamani yeching: $x' - x = 1, x(0) = -1$.

✓ $x(t) = -1$.

Imtihon 1-курс Дифференциал тенгламалар фанидан якуний назорат-МТН1224

Talaba NABIYEVA SITORA LAZIZ QIZI

Guruh 650-20 KTo`

Boshlandi 07.07.2021 12:26

Tugadi 07.07.2021 12:37

To'g'ri 16

Foiz 80.0

1. Найти общее решение уравнения $y'' - 2y' + y = x^2$

✓ $y = (C_1 + C_2x)e^x +$
 $+ x^2 + 4x + 6$

2. Найти общее решение уравнения $y'' + 2y' - 3y = e^{2x}$

✓ $y = C_1e^{-3x} + C_2e^x + \frac{1}{5}e^{2x}$

3. Найти частное решение дифференциального уравнение $y'\sin x - y \ln y = 0,$
 $y(\pi/2) = 1$

✗ Javob belgilanmagan

4. Найти общую решение уравнению $y'' - y = 0$

✗ $y = C_1e^x + C_2xe^{-x}$

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

✓ $y = \frac{1}{24}x^4 + \frac{1}{2}C_1x^2 + C_2x + C_3$

18. Tenglamani yeching $\frac{ds}{dt} = \frac{s}{t} - \frac{t}{s}$

✗ $s = 2t^2 \ln \left| \frac{C}{t} \right|$

19. Tenglamaning tipini aniqlang:

$$y' = f_1(x)f_2(y)$$

✓ O'zgaruvchilari ajraladigan

20. Tenglamani yeching:

$$x'' = 1, x(0) = 0, x'(0) = 1.$$

✓ $x(t) = t + \frac{1}{2}t^2$.

12. $y'' - y = xe^x$ tenglamaning umumiyligini toping

✓ $y = C_1 e^{-x} + \left(C_2 + \frac{x^2 - x}{4} \right) e^x$

13. Ushbu $y' + P(x)y = Q(x)y^n$ Bernulli tenglamasini chiziqli tenglamaga keltirish uchun qanday almashtirish qo'llanadi?

✓
$$\begin{aligned} z &= y^{-n+1}, \\ z' &= (-n+1)y^{-n} \cdot y' \end{aligned}$$

14. Quyidagilarni qaysi biri chiziqli tenglamaning umumiyligini ko'rinishi?

✓ $y' + P(x)y = Q(x)$

15. $y'' - 2y' + y = x^2$ tenglamaning umumiyligini toping.

✓
$$\begin{aligned} y &= (C_1 + C_2 x)e^x + \\ &+ x^2 + 4x + 6 \end{aligned}$$

4. Ushbu $4y' + y = 0$ tenglamaning umumiy yechimini toping?

✓ $y = Ce^{-\frac{x}{4}}$

5. Aslning tasvirini toping: $f(t) = e^{2t} \sin t$

✓ $F(p) = \frac{1}{(p - 2)^2 + 1}$

6. Differensial tenglamani yeching:

$$y' - \frac{y}{x} = -\frac{12}{x^3}$$

✓ $y = \frac{4}{x^2} + Cx$

7. Tenglamani yeching:

$$x' - x = 1, x(0) = -1.$$

✓ $x(t) = -1.$

8. Erkli o'zgaruvchi, noma'lum funksiya va uning

1. Differensial tenglamalar sistemasini noma'lumlarni yo'qotish usulida yeching:

$$\begin{cases} y' = 2y + z \\ z' = 3y + 4e^x \end{cases}$$

✓ $\begin{cases} y(x) = C_1 e^{-x} + C_2 e^{3x} - e^x \\ z(x) = -3C_1 e^{-x} + C_2 e^{3x} + e^x \end{cases}$

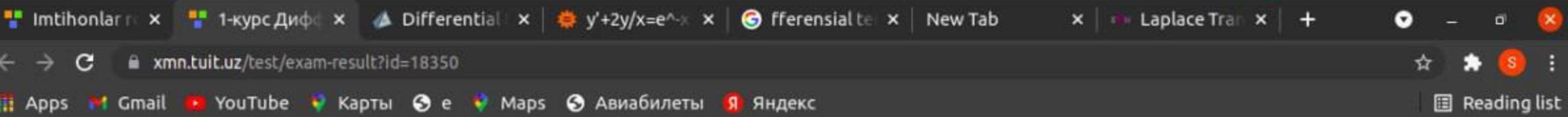
2. $y'' - y' - 2y = 0$ tenglamaning

$y(0) = 0$ va $y'(0) = 3$ boshlang'ich shartni qanoatlaniruvchi yechimini toping

✓ $y = e^{2x} - e^{-x}$

3. Tenglamani yeching: $x'' - 2x' + 2x = 1$,
 $x(0) = x'(0) = 0$.

✓ $x(t) = \frac{1}{2}(1 - e^t \cos t + e^t \sin t)$.



4. Quyida shartlardan qaysi biri bajarilsa $y' = f(x, y)$ tenglama nolinchilari tartibli bir jinsli differensial tenglama bo'ladi?

✓ $f(\lambda x, \lambda y) = f(x, y)$

5. Differensial tenglamani yeching: $y' + 2y = 3e^x$

✓ $y = Ce^{-2x} + e^x$

6. $y' + P(x)y = Q(x)$ tenglamanini yechishning Bernulli usulida umumiy yechim ... ko'rinishda izlanadi

✓ $y = uv$

7. $y'' - 4y' + 12y = 0$ tenglamaning fundamental yechimlari sistemacini

1. Fundamental yechimlari sistemasi

$y_1 = e^x \cos 3x, y_2 = e^x \sin 3x$ bo'lgan

chiziqli bir jinsli differensial tenglama tuzing.

✓ $y'' - 2y' + 10y = 0$

2. Ushbu $y'' + y = 4ctgx$ differensial

tenglamani o'zgarmasni variatsiyalash usulida
yechish uchun tuzilgan sistemani aniqlang.

✓ $\begin{cases} C_1'(x) \cos x + C_2'(x) \sin x = 0 \\ -C_1'(x) \sin x + C_2'(x) \cos x = 4ctgx \end{cases}$

3. Aslning tasvirini toping: $f(t) = te^{ta}$

✓ $F(p) = \frac{1}{(p-a)^2}$

4. Tasvirning asl funksiyasi topilsin:

$$F(p) = \frac{p}{(p^2 - 1)^2}$$

8. Erkli o'zgaruvchi, noma'lum funksiya va uning hosilalari yoki differensiallarini bog'lovchi tenglamaga ... deyiladi.

✓ differensial tenglama

9. Quyidagilardan qaysi biri to'la differensial tenglama bo'la olmaydi?

✓ $ydx - (x + y^2)dy = 0$.

10. O'zgaruvchilari ajraladigan differensial tenglamani aniqlang.

✓ $(1 + e^{2x})ydx = e^x dy$

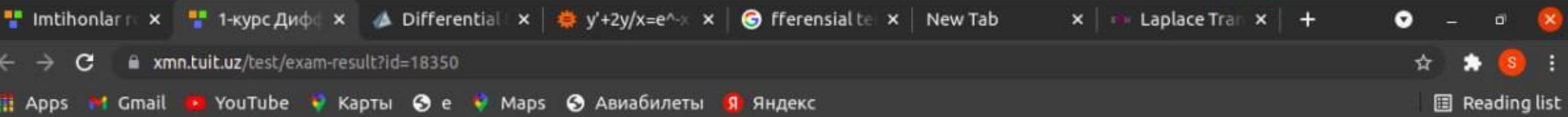
11. Differensial tenglamani yeching:

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

✓ $y = (x + C)e^{x^2}$

12. $y'' - y = xe^x$ tenglananining umumiyl
yechimini toping

✓ $y = \frac{1}{2}x^2e^x + C_1x + C_2$



7. $y'' - 4y' + 13y = 0$ tenglamaning fundamental yechimlari sistemasini toping

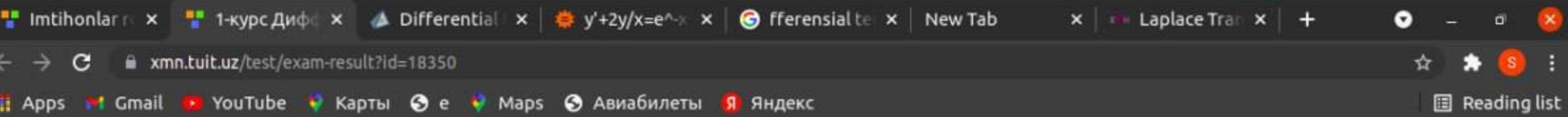
✓ $y_1 = e^{2x} \cos 3x,$
 $y_2 = e^{2x} \sin 3x$

8. Chiziqli differential tenglamani yeching: $y' - \frac{3y}{x} = x$

✓ $y = Cx^3 - x^2$

9. Laplas almashtirishini aniqlang:

✓ $F(p) \doteq \int_p^\infty e^{-pt} f(t) dt$



12. Chiziqli differentisl tenglamani yeching: $y' + \frac{2y}{x} = \frac{e^{-x^2}}{x}$

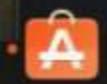
✓ $y = \frac{C - e^{-x^2}}{2x^2}$

13. Aslning tasvirini toping: $f(t) = t$

✓ $F(p) = \frac{1}{p^2}$

14. Differentisl tenglamani yeching:
 $y' - 2xy = -2x$
 $y(0) = 3$

✓ $y = 1 + 2e^{x^2}$



Imtihonlarn...

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Maps



Авиабилеты



Яндекс



Reading list

15. Fundamental yechimlari sistemasi $y_1 = e^{2x}$, $y_2 = e^{3x}$ bo'lgan chiziqli bir jinsli differential tenglama tuzing.

✓ $y'' - 5y' + 6y = 0$

16. $y'' - 4y' - 5y = x$ tenglamaning umumiy yechimini toping?

✗ $y = C_1 e^{3x} + C_2 e^{-x} - \frac{1}{5}x + \frac{4}{25}$

17. Quyidagi tenglama uchun integralovchi ko'paytuvchi qanday bo'ladi:

$$(x^2 - y)dx + (x^2 y^2 + x)dy = 0$$

✓ $\mu(x) = \frac{1}{x^2}$

Hide all



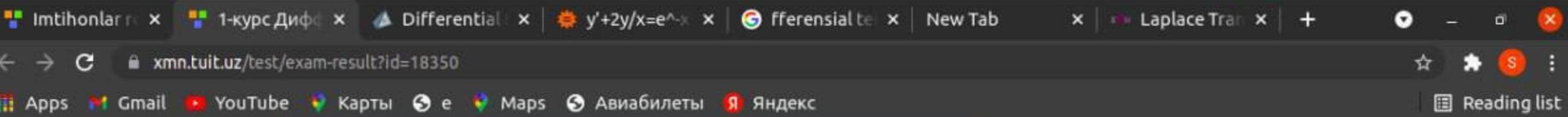
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10. $y''' - 5y'' + 4y = 0$ tenglamaning xarakteristik tenglamasi ildizlarini toping

✓ $k_1 = -1, \quad k_2 = 1,$
 $k_3 = -2, \quad k_4 = 2$

11. Tenglamani yeching: $x' + x = e^{-t}, x(0) = 1.$

✓ $x(t) = (t+1)e^{-t}.$

12. Chiziqli differential tenglamani yeching: $y' + \frac{2y}{x} = \frac{e^{-x^2}}{x}$

$C - e^{-x^2}$



1. Найти решение уравнению

$y'' + 9y = 0$ удовлетворяющую начальную условию

$$y(0) = 0, \quad y'\left(\frac{\pi}{4}\right) = -3.$$

✗ $y = -\sqrt{2} \sin 3x$

2. Решите уравнение:

$$x'' + 2x' + x = \sin t,$$

$$x(0) = 0, x'(0) = -1$$

✓ $x(t) = \frac{1}{2} \left(e^{-t} - t e^{-t} - \cos t \right).$

3. Какая замена требуется для решения

3. Какая замена требуется для решения уравнения $xy'' = y' \ln \frac{y'}{x}$?

✗ $y' = p, y'' = \frac{dp}{dy}$

4. После преобразования, уравнение Бернулли преобразуется в ... уравнение.

✓ линейное

5. Найти общее решение уравнения

$$y'' = \sin 2x$$

✓ $y = -\frac{1}{4} \sin 2x + C_1 x + C_2$

6. Найти общую решение уравнению

6. Найти общую решение уравнению

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

✗ $y = C_1 e^x + C_2 x e^x$

7. При решении уравнение

$y' + P(x)y = Q(x)$ методом Бернулли
общее решение ищется в виде ...

✓ $y = uv$

8. Определить уравнение Риккати .

✗ $y'' = y^2 + 2y + 2y'$

9. Которое из следующих уравнений
является уравнением Бернулли:

12. Найти изображение оригинала:

$$f(t) = t + 2e^t$$

✓ $F(p) = \frac{2p^2 + p - 1}{p^2(p - 1)}$

13. Определить порядок уравнения
после понижения порядка его

$$F\left(x, y^{(k)}, y^{(k+1)}, \dots, y^{(n)}\right) = 0$$

✗ k

14. Построить линейное однородное
уравнение фундаментальное система
решение которого есть

$$y_1 = e^{2x}, \quad y_2 = e^{3x}.$$

✓ $y'' - 5y' + 6y = 0$

14. Построить линейное однородное уравнение фундаментальное система решения которого есть

$$y_1 = e^{2x}, \quad y_2 = e^{3x}.$$

✓ $y'' - 5y' + 6y = 0$

15. Определить тип уравнение:

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

✓ с частными производными

16. Решите уравнение: $x'' + 4x = t,$
 $x(0) = 1, x'(0) = 0.$

✗ $x(t) = \frac{1}{4}t + \cos 2t$



17. Решите уравнение: $x'' - 2x' + x = e^t$,
 $x(0) = 0, x'(0) = 1$.

✓ $x(t) = \frac{1}{2}t^2e^t + te^t$.

18. Какая замена выполняется для решения уравнения

$$(1 - x^2)y'' - xy' = 2?$$

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

19. Найти решение уравнения $y'' = e^{-x}$

удовлетворяющее условиям $y(0) = 1$,

$$y'(0) = 0$$

19. Найти решение уравнения $y'' = e^{-x}$

удовлетворяющее условиям $y(0) = 1$,

$$y'(0) = 0$$

✓ $y = e^{-x} + x$

20. Найти решение уравнению

$y'' - y' - 2y = 0$ удовлетворяющую
 начальную условию

$$y(0) = 0 \text{ и } y'(0) = 3.$$

✓ $y = e^{2x} - e^{-x}$

Natijalar

1-курс Дифференциал тенгламалар фан



HEMIS Student



O'zbekcha

METINOV B. B.

510-20 TTo'(TTI)

1. $y'' - y = 0$ tenglamaning $y(0) = 0$, $y'(0) = 2$

boshlang'ich shartlarni qanoatlantiruvchi
yechimini toping

✓ $y = e^x - e^{-x}$

2. Tenglamani yeching: $x'' + 2x' + x = \sin t$,
 $x(0) = 0, x'(0) = -1$

✓ $x(t) = \frac{1}{2} (e^{-t} - t e^{-t} - \cos t)$.

3. $y' = \frac{a_1x + b_1y + c_1}{a_2x + b_2y + c_2}$ tenglama qachon bir

jinsl differensial tenglamaga keladi?



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





1-курс Дифференциал тенгламалар фан



HEMIS Student



O'zbekcha

METINOV B. B.

510-20 TTo'(TTI)

1. $y'' - y = 0$ tenglamaning $y(0) = 0$, $y'(0) = 2$

boshlang'ich shartlarni qanoatlantiruvchi
yechimini toping



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

2. Tenglamani yeching: $x'' + 2x' + x = \sin t$,
 $x(0) = 0, x'(0) = -1$



$$x(t) = \frac{1}{2} (e^{-t} - t e^{-t} - \cos t).$$

3. $y' = \frac{a_1x + b_1y + c_1}{a_2x + b_2y + c_2}$ tenglama qachon bir

jinsl differensial tenglamaga keladi?



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



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

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

5. Tenglamani yeching: $y''(t) - 6y'(t) + 9y(t) = 0.$
 $y(0) = A, y'(0) = B.$

✓ $y(t) = (B - 3A)te^{3t} + Ae^{3t}$

6. Differensial tenglamani yeching: $y' = \frac{y+1}{x+1}$

✓ $y = -1 + C(x+1)$

7. Ushbu $y' + \frac{y}{3} = \frac{x+1}{3y^3}$ tenglamani qanday almashtirish yordamida chiziqli tenglamaga olib kelinadi?

✓
$$\begin{aligned} z &= y^4, \\ z' &= 4y^3 \cdot y' \end{aligned}$$

8. Erkli o'zgaruvchi, noma'lum funksiya va uning



● 1-курс Дифференциал тенгламалар фан C ★


$$z' = 4y^3 \cdot y'$$

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



differensial tenglama

9. Aslning tasvirini toping: $f(t) = \sin^2 t$



$$F(p) = \frac{2}{p(p^2 + 4)}$$

10. $F(x, y^{(k)}, y^{(k+1)}, \dots, y^{(n)}) = 0$ tenglamaning tartibini pasaytirish uchun qanday almashtirish bajariladi?



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

11. Tenglamani yeching: $x'' + 2x' + x = t^2,$
 $x(0) = 1, x'(0) = 0.$



$$x(t) = t^2 - 4t + 6 - 5e^{-t} - te^{-t}$$



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11. Tenglamani yeching: $x'' + 2x' + x = t^2$,
 $x(0) = 1, x'(0) = 0$.

✓ $x(t) = t^2 - 4t + 6 - 5e^{-t} - te^{-t}$.

12. $y'' - 2y' - 3y = e^{4x}$ tenglamaning umumiy yechimini toping

✓ $y = C_1 e^{3x} + C_2 e^{-x} + \frac{1}{5} e^{4x}$

13. $y'' + 4y' = 2$ tenglamaning umumiy yechimini toping

✓ $y = C_1 + C_2 e^{-4x} + \frac{x}{2}$

14. 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.

yechimini toping

✓ $y = C_1 + C_2 e^{-4x} + \frac{x}{2}$

14. 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

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

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

16. Quyidagi tenglamalarning qaysi biri o'zgaruvchilari ajraladigan tenglama?

✓ $(1+x^2)dy + ydx = 0$

17. $y'' - 4y' + 4y = 0$ tenglamaning umumiy
yechimini toping



1-курс Дифференциал тенгламалар фан

16. Quyidagi tenglamalarning qaysi biri o'zgaruvchilari ajraladigan tenglama?

✓ $(1+x^2)dy + ydx = 0$

17. $y'' - 4y' + 4y = 0$ tenglamaning umumiy yechimini toping

✓ $y = C_1 e^{2x} + C_2 x e^{2x}$

18. Ushbu $4y' + y = 0$ tenglamaning umumiy yechimini toping?

✓ $y = Ce^{-\frac{x}{4}}$

19. Tenglamani yeching: $x'' + 2x' + x = t$,
 $x(0) = 0, x'(0) = 0$.

✓ $x(t) = 2e^{-t} + te^t + t - 2.$

20. Agar noma'lum funksiya faqat bitta



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✓ $y = Ce^{-\frac{x}{4}}$

19. Tenglamani yeching: $x'' + 2x' + x = t,$
 $x(0) = 0, x'(0) = 0.$

✓ $x(t) = 2e^{-t} + te^t + t - 2.$

20. Agar noma'lum funksiya faqat bitta o'zgaruvchiga bog'liq bo'lsa, bunday differensial tenglamaga ... differensial tenglama deyiladi

✓ oddiy

Natijalar

Imtihon 1-курс Дифференциал тенгламалар фанидан якуний назорат-MTH1224

Talaba METINOV BAHROM BAXTIYOR O'G'LII

Guruh 510-20 TTo'(TTI)

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✓ $y = -1 + C(x + 1)$

20. Tasvirning asl funksiyasi topilsin:

$$F(p) = \frac{e^{-2p}}{p^2 - 9}$$

✗ $f(t) = \frac{1}{3} \sin(3t - 2).$

Natijalar

Imtihon

1-курс Дифференциал тенгламалар
фанидан якуний назорат-МТН1224

Talaba

BEKNIYOZOVA SHAXODAT
SHAVKATOVNA

Guruh

650-20 KTo`



18. $y'' - y = \sin x$ tenglamaning

umumiyl yechimini toping?

✓ $y = C_1 e^{-x} + C_2 e^x - \frac{1}{2} \sin x$

19. Differensial tenglamani yeching:

$$y' = \frac{y+1}{x+1}$$

✓ $y = -1 + C(x+1)$

20. Tasvirning asl funksiyasi topilsin:

$$F(p) = \frac{e^{-2p}}{p^2 - 9}$$

✗ $f(t) = \frac{1}{3} \sin(3t - 2).$



16. $y'' - 10y' + 25y = 0$ tenglamaning

$y(0) = 0$, $y'(0) = 1$, boshlang‘ich shartlarni qanoatlantiruvchi yechimini toping

✓ $y = xe^{5x}$

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

tenglamaning umumiy yechimini toping

✓ $y = C_1 e^x + \left(C_2 + \frac{x}{2}\right) e^{3x}$

18. $y'' - y = \sin x$ tenglamaning

umumiy yechimini toping?





14. Klero tenglamasini aniqlang



$$y = xy' + \psi(y')$$

15. $y'' - y' - 2y = 0$ tenglamaning
xarakteristik tenglamasi va umumiyl
yechimi to‘g‘ri ko‘rsatilgan qatorni
aniqlang



$$\begin{aligned} k^2 - k - 2 &= 0, \\ y &= C_1 e^{-x} + C_2 e^{2x} \end{aligned}$$

16. $y'' - 10y' + 25y = 0$ tenglamaning
 $y(0) = 0, y'(0) = 1$, boshlang‘ich
shartlarni qanoatlantiruvchi yechimini
toping.



11. Quyidagilardan qaysi biri to‘la differensial tenglamaning umumiy yechimi bo‘ladi?

✓ $\int_{x_0}^x M(x, y) dx + \int_{y_0}^y N(x_0, y) dy = C$

12. Differensial tenglamani yeching:

$$y' + 2y = 3e^x$$

✓ $y = Ce^{-2x} + e^x$

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

✓ $y = \frac{1}{24}x^4 + \frac{1}{2}C_1x^2 + C_2x + C_3$





8. $4y'' - y = x^3 - 24x$ tenglamaning umumiyl yechimini toping.

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

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

✓ birinchi tartibli

10. Tenglamani yeching:

$$x' - x = 1, x(0) = -1.$$

✓ $x(t) = -1.$



5. O'zgaruvchilari ajraladigan differensial tenglamani aniqlang.

✗ $(x^2 - 2xy)dy = (xy - y^2)dx$.

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

✓ $y = -\sin x + \frac{C_1 x^2}{2} + C_2 x + C_3$

7. Quyidagi tenglama uchun integralovchi ko'paytuvchi qanday bo'ladi:

$$(x^2 - y)dx + (x^2 y^2 + x)dy = 0$$

✓ $\mu(x) = \frac{1}{x^2}$



$$\checkmark J(\alpha) \leftarrow \frac{1}{\alpha} F\left(\frac{-}{\alpha}\right)$$

4. $y'' - y' - 2y = 0$ tenglamaning

$y(0) = 0$ va $y'(0) = 3$ boshlang'ich shartni qanoatlantiruvchi yechimini toping

✗ $y = e^{2x} + e^{-x}$

5. O'zgaruvchilari ajraladigan differensial tenglamani aniqlang.

✗ $(x^2 - 2xy)dy = (xy - y^2)dx.$

6. $y''' = \cos x$ tenglamining umumiyligini yechimini toping



✗ $x(t) = \frac{1}{2}(1 - e^t \cos t).$

2. $y'' + 4y' = 2$ tenglamaning umumiy
yechimini toping

✓ $y = C_1 + C_2 e^{-4x} + \frac{x}{2}$

3. O'xshashlik teoremasini aniqlang:

✓ $f(\alpha t) \longleftarrow \frac{1}{\alpha} F\left(\frac{p}{\alpha}\right)$

4. $y'' - y' - 2y = 0$ tenglamaning
 $y(0) = 0$ va $y'(0) = 3$ boshlang'ich
shartni qanoatlantiruvchi yechimini
toping





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O'zbekcha

BEKNIYOZOVA S. S.

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1. Tenglamani yeching:

$$x'' - 2x' + 2x = 1,$$

$$x(0) = x'(0) = 0.$$

✗ $x(t) = \frac{1}{2}(1 - e^t \cos t).$

2. $y'' + 4y' = 2$ tenglamaning umumiy
yechimini toping

✓ $y = C_1 + C_2 e^{-4x} + \frac{x}{2}$



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- Imtihonlar

Talaba ma'lumoti

Xabarlar

Tizim

1. Differensial tenglamani yeching: $y' + y = 5$

✓ $y = 5 + Ce^{-x}$

2. $x^2y' = y^2 + xy$ differensial tenglamani yeching

✓ $y = \frac{x}{C - \ln|x|}$

3. Tenglamaning tipini aniqlang: $xy' + y = x \ln x$.

✗ Bir jinsli tenglamaga keltiriladigan

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

dp

Natijalar

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Xabarlar

Tizim

✓ $y = \frac{x}{C - \ln|x|}$

3. Tenglamaning tipini aniqlang: $xy' + y = x \ln x$.

✗ Bir jinsli tenglamaga keltiriladigan

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

✗ $y'' = p \frac{dp}{dy}$

5. Chiziqli differensial tenglamani yeching: $y' - \frac{3y}{x} = x$

✓ $y = Cx^3 - x^2$

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

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

5. Chiziqli differensial tenglamani yeching: $y' - \frac{3y}{x} = x$

✓ $y = Cx^3 - x^2$

6. $y'' + 4y' = 2$ tenglamaning umumiy yechimini toping

✓ $y = C_1 + C_2 e^{-4x} + \frac{x}{2}$

7. Differensial tenglamalar sistemasini noma'lumlarni yo'qotish usulida yeching:

$$\begin{cases} y' = 2y + z \\ z' = -3z + 4e^x \end{cases}$$

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6. $y'' + 4y' = 2$ tenglamaning umumiy yechimini toping

✓ $y = C_1 + C_2 e^{-4x} + \frac{x}{2}$

7. Differensial tenglamalar sistemasini noma'lumlarni yo'qotish usulida yeching:

$$\begin{cases} y' = 2y + z \\ z' = 3y + 4e^x \end{cases}$$

✓ $\begin{cases} y(x) = C_1 e^{-x} + C_2 e^{3x} - e^x \\ z(x) = -3C_1 e^{-x} + C_2 e^{3x} + e^x \end{cases}$

8. Ushbu $y'' + y = 4\operatorname{ctgx} x$ differensial tenglamani o'zgarmasni variatsiyalash usulida yechish uchun tuzilgan sistemani aniqlang.

✓ $\begin{cases} C'_1(x) \cos x + C'_2(x) \sin x = 0 \\ -C'_1(x) \sin x + C'_2(x) \cos x = 4\operatorname{ctgx} x \end{cases}$



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$$\left\{ \begin{array}{l} -C_1'(x)\sin x + C_2'(x)\cos x = 4ctgx \end{array} \right.$$

9. Tenglamaning tipini aniqlang: $y' - \frac{y}{x} = x + 1$

✗ Bir jinsli differensial tenglama

10. $F(x, y^{(k)}, y^{(k+1)}, \dots, y^{(n)}) = 0$ tenglamaning tartibini pasaytirish uchun qanday almashtirish bajariladi?

✓ $z = y^{(k)}$, $z' = y^{(k+1)}$, ..., almashtirish bajariladi
 $z^{(n-k)} = y^{(n)}$

11. Agar differensial tenglamalar sistemasi ikki noma'lumli normal sistema bo'lsa, uning umumi yechimining ko'rinishini aniqlang.

✓ $\begin{cases} y = \varphi_1(x, C_1, C_2) \\ z = \varphi_2(x, C_1, C_2) \end{cases}$

12. Qaysi bir tenglamada $z = y^{-1}$ almashtirish orqali chiziqli differensial tenglama hosl



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11. Agar differensial tenglamalar sistemasi ikki noma'lumli normal sistema bo'lsa, uning umumiyl yechimining ko'rinishini aniqlang.

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✓
$$\begin{cases} y = \varphi_1(x, C_1, C_2) \\ z = \varphi_2(x, C_1, C_2) \end{cases}$$

12. Qaysi bir tenglamada $z = y^{-1}$ almashtirish orqali chiziqli differensial tenglama hosil

- 1) $(y - y^2)dx - (x - 1)dy = 0$
qilinadi: 2) $y' - 2ytgx + y^2 \sin^2 x = 0$
3) $xy + y^2 = (2x^2 + xy)y'$

✗ Faqat 2)

13. Quyidagilardan qaysi biri to'la differensial tenglamaning umumiyl yechimi bo'ladi?

✓
$$\int_{x_0}^x M(x, y)dx + \int_{y_0}^y N(x_0, y)dy = C$$

14. Quyidagi tenglamalarning qaysi biri o'zgaruvchilari ajraladigan tenglama?

✓
$$(1+x^2)dy + ydx = 0$$



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✗ Faqat 2)

13. Quyidagilardan qaysi biri to'la differensial tenglamaning umumiy yechimi bo'ladi?

✓ $\int_{x_0}^x M(x, y)dx + \int_{y_0}^y N(x_0, y)dy = C$

14. Quyidagi tenglamalarning qaysi biri o'zgaruvchilari ajraladigan tenglama?

✓ $(1+x^2)dy + ydx = 0$

15. Differensial tenglamada uning umumiy yechimidan ixtiyoriy o'zgarmasning hech bir qiymatida hosil qilish mumkin bo'lmasagan yechim nima deb ataladi?

✓ maxsus yechim

16. Agar noma'lum funksiya faqat bitta o'zgaruvchiga bog'liq bolsa, bunday differensial tenglamaga ... differensial tenglama deyiladi

✓ oddiy

17. Qaysi bir formula noto'g'ri?



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15. Differensial tenglamada uning umumi yechimidan ixtiyoriy o'zgarmasning hech bir qiyimatida hosil qilish mumkin bo'lmasan yechim nima deb ataladi?

✓ maxsus yechim

16. Agar noma'lum funksiya faqat bitta o'zgaruvchiga bog'liq bo'lsa, bunday differensial tenglamaga ... differensial tenglama deyiladi

✓ oddiy

17. Qaysi bir formula noto'g'ri?

✗ $f(at) \leftarrow \frac{1}{a} F\left(\frac{p}{a}\right)$

18. Tenglamani yeching:
 $x''(t) + x(t) = 2 \cos t,$
 $x(0) = 0, x'(0) = -1;$

✗ Yechimga ega emas



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18. Tenglamani yeching:
 $x''(t) + x(t) = 2 \cos t,$
 $x(0) = 0, x'(0) = -1;$

* Yechimga ega emas

19. $y'' - 16y = x - 1$ tenglamaning umumi yechimini toping

✓ $y = C_1 e^{-4x} + C_2 e^{4x} - \frac{1}{16}x + \frac{1}{16}$

20. $y'' = e^x$ tenglamaning umumi yechimini toping

✓ $y = e^x + C_1 x + C_2$

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