D3#3
3.1 (siny + g sinx + 
$$\frac{1}{x}$$
)  $dx$  + (x cos g - cos x -  $\frac{1}{y}$ )  $dy = 0$ 

P(x,y)  $dx$  + Q(x,y)  $dy = 0$ 

P(x,y)

1)  $dy = 20$ 

Dy  $dx = 20$ 

P(x,y)

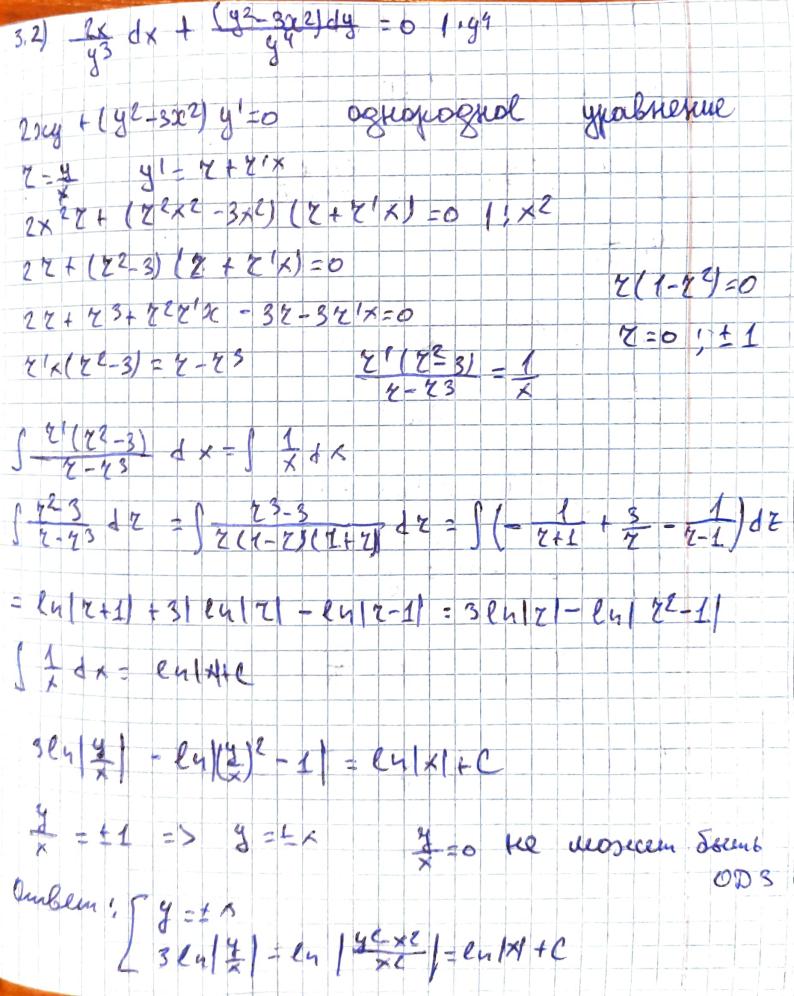
3)  $u(x,y) = \int P(x,y) dx + u(y) = \int S(x,y) dx + u(y)$ 

Siny  $(x,y) = \int P(x,y) dx + u(y) = \int S(x,y) dx + u(y) = Q(x,y)$ 

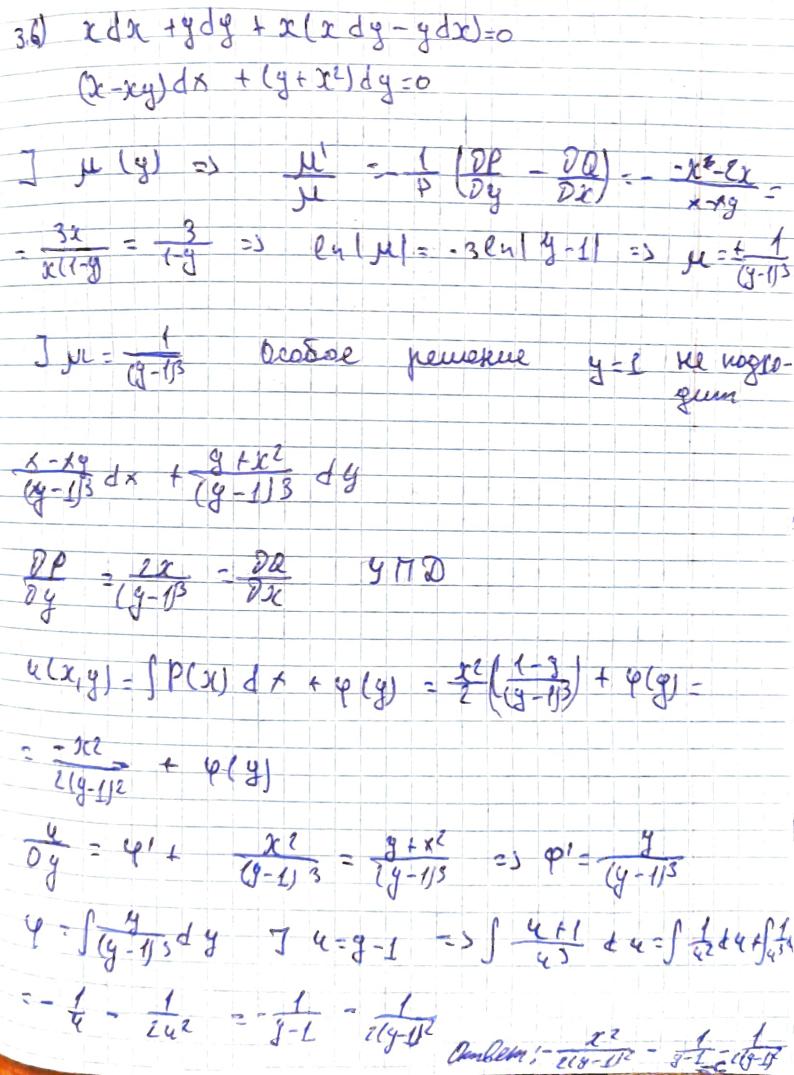
P(x)  $dx = 20$ 

P(x,y)  $dx = 20$ 

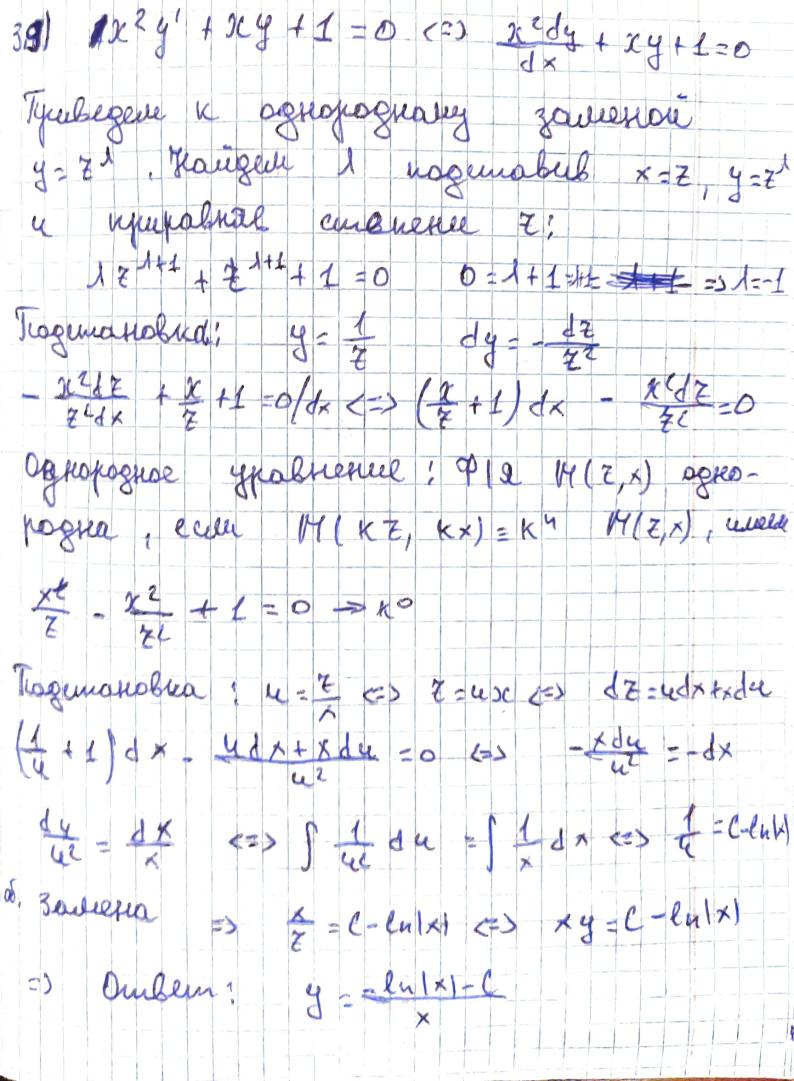
P



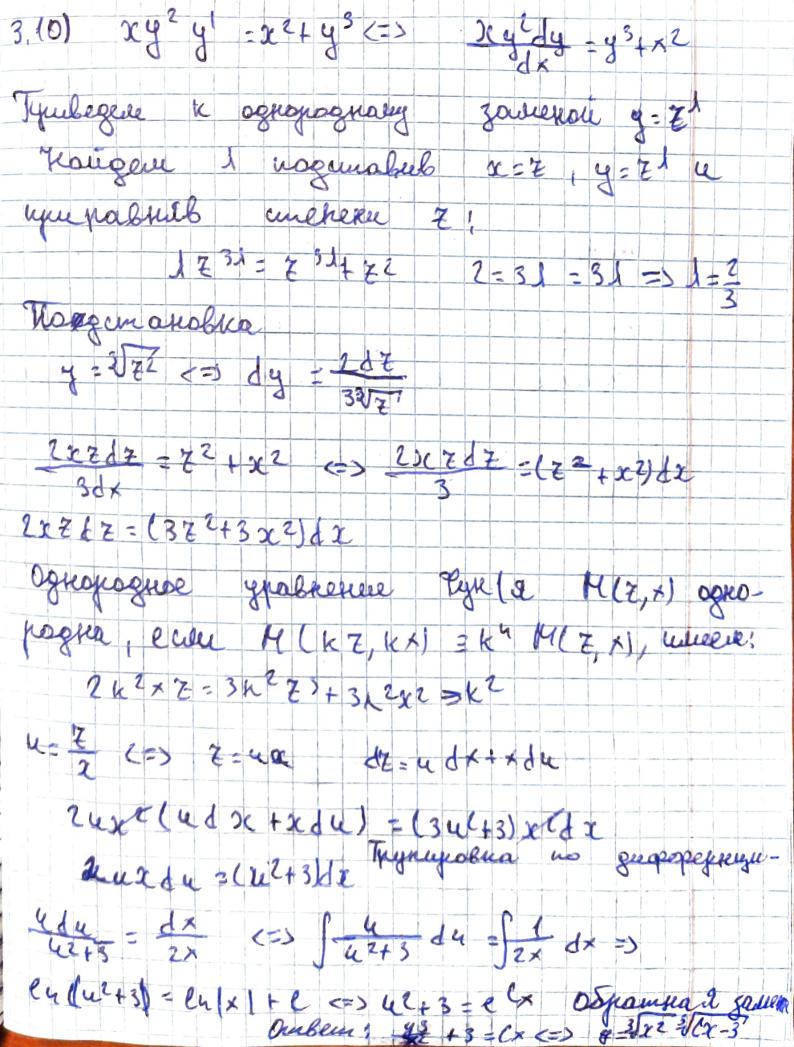
- DR 4x9 -9y2 +3y2 - 4x4-6y2 3y3 - 2xy2 - y2 (3y-2x) 1 = - 1 DP eul 4 = -2 euly -24+39-1x) Q = 192 (2x-3g)dx+(1/2-3x)dy=0 DQ = 5 = 5 4, 11, D DP 43 u(x,y)= | R(x,y) & r + \p(y) = r2 + \p(xy) - 3 yx Dy = 41 - 32c = 7 - 3x => pl Ourlem! 11-4-342=



06, 10,2021 3.7) (y+ dxy) dx = xdy => (y+ dx dy)dx = xdy K=> Ady=(y+ Jy)dx Ognopognoe ypoliteme: 91a M(y,x) agrapagnad, eau M(ky, kx)=K M(y,x), whelen: kx=kJxJg+ky > k 4 = 3 = 4x dy = 4dx+xda x (u dx+xdu) = (u+Ju) xdx <>> usetx+scl eu=uxtx+Juscdx 1 3 u=0 > =0 ≥ 9=0 du dx c=s July du = { 1 dx (=) 250 = lu |x|+0 Barrella: 2 Jy = en (x)+e Ourleur: y = xenzixi + Cxenixi + Czx, x=0,90



3.8) 2x 2y = y3+xy = 223 = 200+xy Tyulegenere « ognopognosny zamekoù y===C Kangen i hagemalek x=Z, y=Zi u hjugablett unenesse 12 12 = (2312 + x 52) dx Ognopognoe yple: PII M(ZX) ognopogna ecu M(KE, KN) = K4 M(Z, JC), whell: K312 x2 = K312 x 12 + K312 x 12 3 K3/2 Fragemanokka u= = (=) 7=47(=) dz=ud 1+xde 1312 (udx + 2cdu) = (u312 + Ju) x 92 dx Jux 312 dx + x512 du = 4312 20 312 d x + Jux ste du 305/2 du 2 43/2 203/2 dx /: x5/2 4 43/2 /-> dy -dx u= =0 = 4=0 = 1 dx {= c-ln |x| => 3 aleena; = Ourben; ye= x - c-ln |x| = c-ln |x|



3.11) (1+ y 25 in 2x) doc - 2y (cosx)2 dy =0 ghabitetul & nathetix guopopepen yurdasc. M(x, y) dy + N(2, y) dx=0, ege M(x, y)=-2005400 4 u N (oc, g) = sin(2)0 g2+1 ka naturii grappepepe yual; Tyrobejica M(x,y) = V(x,y) =  $4\cos(x)\sin(x)$  g Haugan = F(x,y) = dF(x,y) = F'y dy + F'x dxF(x,y) = [N(x,y) d x = [ sin(2x) y 2+1 = = fylsin(2x)+1dx = ylfsin(2x)dx + fidx = n - 4 costs)  $\left(3c - \cos\left(2x\right)g^2\right)_y = -\cos(2x)g$ (y= \ M(x,y) - (>c-cos(2x)g2) dy= \ eos(2x)g-- 2 cos2 ( ) c) y dy = cost2x192 - cos2 (x) yc. => F(x, y) = x - cos(2x)y2 + cy = cos(2x)y2 - cos(6x)y2cos (21/92 + 20 => cos(20)92 -cose(20)92 cos(20)92 per Ourben! ye = - C-X

3.12) )cydx = (y3 +x2y+x2)dy Kyrouzien urmerker => (y3+xey+x2)dy-xydx=0 grabkerne 6 nairesex geopopegierlesiealax M(x, y) M(x, y) dy + M(x, y) M(x, y) dx =0 coe M(x,y) = y s+x 2y+x 2 4 N(x,y) = -xg superka ka naskosié gusperensulas! M(x,y)x = 2xy + 2x + -x = N(x,y)yTween emergences altonomach y(x,y) M(x,y) =  $\frac{\partial M}{\partial x}$  u M(x,y)' =  $\frac{\partial N}{\partial y}$ Uz yalobal! M Du - N DR - M Py Da) Tymo  $\mu(x,y) = \mu(y) \Rightarrow Du = 0 morga$ golobul nyukuwalm bug;  $\mu dy =$ Oghheyer om 4) 1 1 = 1 - 1 ( PN - P14) dy - 1 - 3 - 2y - slulg lu (p) = -3 lu(y) - eg => 1 = 43 e 28

( x2 y ce29 + y se29 + e29 ) dy gely 20 при денении попирано решение! 330гд Grabketive & Nather guarantekinder M(x, y) dy + N(x, y) dx=0 egl M(2,9)= 12 + 12 + 12 + 12 4 N(x,g) = - x
y elg
Tyrobenka ha nautusii guapapekestyvas: M(n,y) = N(x,g) =  $\frac{2x}{y c_e c_g}$  +  $\frac{2x}{y s_e c_g}$ Kaugelle Flogy ! & Flogy - FydytFidx F(x,y)= [ N(x,g) dx = ] - \frac{x}{y2\end{arg}} dx = \frac{x}{2y2\end{arg}} + (y) (- xc) - x2 + x2 - y2e2y - y3e2y

Cy = M(x,y) - ( - 200 ) y dy = 1 = 200 dy = 200 )

