Side/Page: 1 of 15

Eksamen i/Examination in:____

Kandidatnr./Candidate no.: 171737

Dato/Date: 30/11/2018

4120

Skriv ikke her / Do not write here P1 a) Differenticate: (1c, L, +, w) al JK + HUJK = where \bigcirc -> a La JEdL + 1. al K dK + BL JEdL + 1 bL E ZdK = Lerdw+ wertdl + rwlertd+ (futertdr) La + Lb = JKert (2) $a \lambda^{a-1} dL + b \lambda^{b-1} dL = 1 \kappa^{-1/2} e^{rt} dK + r \sqrt{\kappa} e^{rt} dt$ Approx. L(1, 2(a+b)+h) dt=1 dw=h5) reeplace the point (4,1,0,2(CI+b)) First a^2 , 2dL + a, $1dK + b^2$, 2dL + b. 1dK = (\mathbf{i}) e^{ro}h + 2(a+b) e^odL + r.2(a+b), Le^{ro}. 1 2 (endul) adL+ bdL = 1 dK + 2r e°. 1 Den grønne kopien beholdes av kandidaten./ The green copy is retained by the candidate.

Eksamen i	Examination in:	i	1_	â

	iO * Universitetet i Oslo Eksamen i/ <i>Examination in:</i>
A CONTRACTOR	Kandidatnr./Candidate no.: 171737
	Side/Page: 2 0 15 Dato/Date: 30/11/2018
Skriv ikke her / Do not write here	
	P.
	Continuation of (b)
	$\bigcirc 2a^2dL + adk + 2b^2dL + bdk = h + 2(a+b)dL + r 2(a+b)$
	$(a+b)dL = \frac{dk}{4} + 2r$
	from (2) $dk = 4(a+b)dL - 8r$
	reeplacing in D
	$-3(2a^2+2b^2)dL + a((a+b)dL-2r) + b((a+b)dL-2r) = h+2(a+b)dL +$
	r 2 (a+b)
	$((2a^2+2b^2)+a(a+b)+b(a+b)-2a-2b)dL=2r(a+b)+h+2r(a+b)$
	$\left(\frac{20^{2}+2b^{2}+a^{2}+ab+b^{2}+ba-2a-2b}{dL}\right)dL = 4r(a+b)+h$
	dL = 4r(a+b) + h
	$(3a^{2}+3b^{2}+2ab-2(a+b))$

Eksamen i/Examination in:____

in:____4120

didatnr./Candidate no.: 171737

	Kandidathr./Candidate no.: <u>i + i i S i</u>
	Side/Page: <u>30415</u> Dato/Date: <u>30/11/2018</u>
Skriv ikke her / Do not write here	
	P2
	a) K=0 (positive or negative)
	r K>0_1_
	()) (m) (0.700)
	$x \rightarrow 0^{+} x^{+} ln k$ $0^{+} ln 0$ $(k < 0) = 0 k$
	=) for K>0;
	$\lim_{k \to \infty} \frac{1}{X^{k}} = 0 \qquad \qquad$
	$x \rightarrow 0^+$ $Ln \times = -00$
	×
	$\frac{\lim_{X \to 0^+} x^{k}}{x^{k}} = \frac{-k}{2} - \frac{-k}{4}$
	$\times -)0^{\tau}$ \times^{k} \bigcirc $\cdot \gamma$
	$k > 0 \qquad l = 0 \qquad dl$
	$(i) lim _ 1 \qquad 00.00 \qquad 70$
	X-JO XKLOX K<0 1
	0,00
	from(i)
	for KCO:
	$\frac{1}{100} \frac{1}{100} \frac{1}$



	UiO : Universitetet i Oslo		4120
	Side/Page: 4 0715		171737 30/11/2018
Skriv ikke her Do not write he		$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	0
	for K>0	K-1	
	$\frac{1}{10000000000000000000000000000000000$	2018 (lnx) X	017
	$\frac{\lim_{X \to 0^+} \sum_{k=1}^{-K} \frac{-K}{2018 (\ln x)^{2017}}}{2018 (\ln x)^{2017}}$	$\frac{2.14.}{(2018)(2017)(Lax)^{201}}$	6
	$\frac{km}{x - 70^4} = \frac{k^2 x^{-K}}{(2018)(2017)(nx)^{2016}}$	000 O	~
		18 times:	
	$\frac{2018 - K}{X - >0^{+} 2018 \left((Ln X)^{\circ} \right)} =$	$\frac{k}{20181} \times \frac{1}{x^{k}}$	00



Eksamen i/*Examination in: 41.20*

Kandidatnr./Candidate no.: 171737

Dato/Date: 30/11/2018

_

Side/Page:	5	of	15

Skriv ikke her /	
Do not write here	
	P2
	(b)
	(i) $1 du = ln(1-lnx) $ or $x < e$
	(i) $1 du = ln(i - lnx) o < x < e$
	$\times u(1-lnu)$
	-> Integration by substitution:
	-> Integration by substitution:
* Error:	
Not from <i>x</i> to 1;	· Lnu = V 1 replacing
v runs from ln x to	
* Doing indefinite	
integrals first woul	d have $u = \int dv = \int -\ln(1-v)$
avoided this fault.	
* Antiderivative:	X I - V X
$-\ln 1-\nu $, which eq	uals
$-\ln(1-\nu)$ since the	limits
for v are $\ln x$ (< \ln	e=1) back to the orignal value:
and 0.	
* The answer ends	
correct.	$\int \frac{1}{du} = -Ln(1-Lnu)$
	$\mathcal{U} \times \mathcal{U}(i-\ln u)$ ×
	$= -\ln(1-\ln 1) + \ln(1-\ln x)$
	\cap)
	$\int_{x} \frac{1}{u(1-\ln u)} du = 2n(1-\ln x)$
	$\int \mathcal{U} = 2 \cap (I = lnx) $
	χ_{1}
	u(1-u(a))



Eksamen i/Examination in: 4120

	Kandidatnr./Candidate no.:771737				
	Side/Page: $60(15)$	Dato/Date: 30/11/2018			
Skriv ikke her / o not write here					
o not while here	P2				
	(b)				
	ii) $\frac{1}{2} \int e^{v} (n ((r + e^{v})^{2}) dv =$	$(1+e^{\vee})(ln(1+e^{\vee})-1)+C$			
	$\frac{1}{2}$	<u> </u>			
	By substitution:				
	$ue^{v} - u = 1$				
	$e^{v}dv = du + \frac{1}{2} \int Ln(u)^{2} dv$	du			
	$= \frac{2}{2} \int ln(u) du = u ln u -$	U + C			
	/ 2				
	= u(lnu-1) + C				
	Back the original value) · · · · · · · · · · · · · · · · · · ·			
	$\left[\frac{1}{\sqrt{1-10}} + \frac{1}{\sqrt{1-10}} \right]$	(γ)			
	$\frac{1}{2} \int e^{v} \left(n \left((1 + e^{v})^{2} \right) dv = (1 + e^{v}) \left((1 + e^{v})^{2} \right) dv = (1 + e^$				
		· /			

	UiO	0	L
Dates			

Eksamen i/*Examination in: 4120*

Kandidatnr./Candidate no.: 171737

Side/Page: 7	0-1:	Ş
--------------	------	---

Dato/Date:	2018
------------	------

Skriv ikke her / Do not write here	
	P2
	(C) $X \in (0, e)$
	$\dot{x} = k \left(1 - \ln x \right) e^{t} \left(n \left(0 + e^{t} \right)^{2} \right)$
Preferably: Check for zeroes	
before dividing.	$\int \frac{dx}{x(1-lnx)} = \int e^{t} ln((1+e^{t})^{2}) dt$
	x(1-Lnx)
	* Constant solution when $X \equiv 0$ and $X \equiv e$
	otherwise we integrate:
	from (b):
	-A
	$-Ln(1-lnX) = 2(1+e^{t})(ln(1+e^{t})-1)+2C$
In complete colution	$\ln(1 - \ln x) = A - 2(1 + e^{t})(\ln(1 + e^{t}) - 1)$
Incomplete solution In this course, you	

Eksamen i/Examination in:_____2

UiO : Universitetet i Oslo

Side/Page: 8 of 15

Kandidatnr./Candidate no.: 1717-37

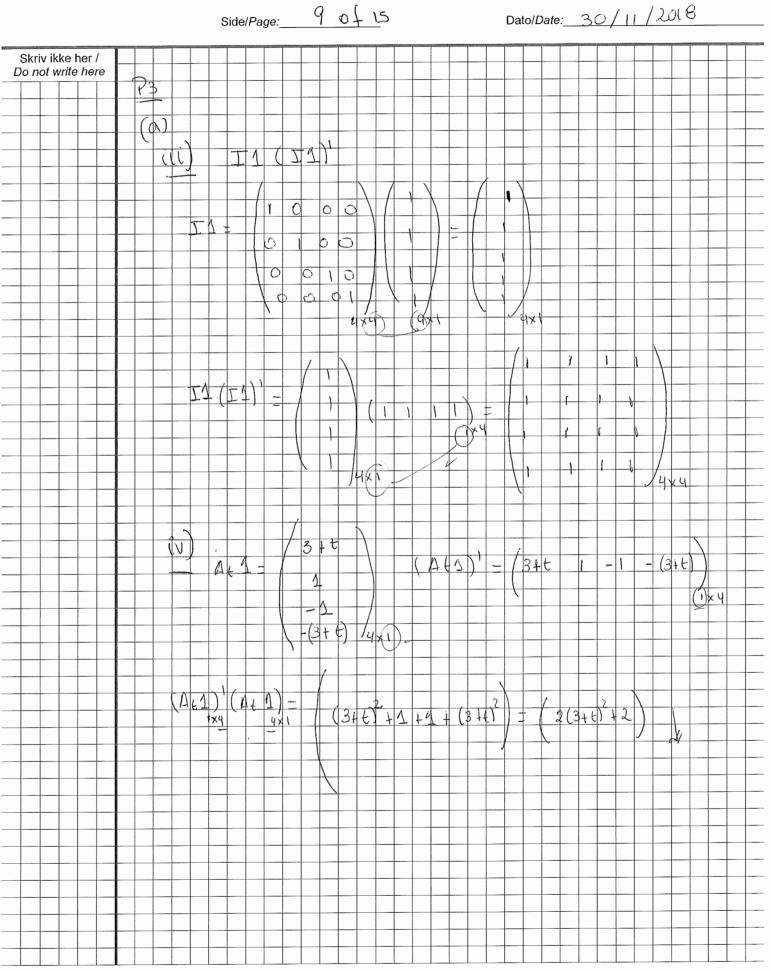
Dato/Date:_____30 / 1 / 2018

Skriv ikke her /						
Do not write here						
	Po		/			
	 	╪╴┼╶┼╌┼╴╎	1 6	$ p 2 \setminus$		+ + +
		+		+ + +		+
						<u> </u>
		$ A_{1} \neq $	0 -1	20	and 1 = 1	<u></u>
		· · · · · · · · · · · · · · · · · · ·				
			-2	10/		
			V-2 0	-t -v		
	(α)					
	Î		7			
			/1 6	021	E 0 2	
	2					+
	A _t	= AE AE =	0 -1	20	-1 2 0 1	
			14 The			
			1-2 0	- t - 1 /	$\phi \sim t - 1$	
			142 0			
				· · · ·		+
			a,			
TAKE NOTE:			//-3/	0 0	O Dot product.	
To the right, the	matrix					
		M2 +		-3 0	$\begin{array}{c c} O & & & & \\ O & & & & \\ & & & & \\ & & & &$	LOVON
multiplication is			/	-3 0	$\bigcirc \qquad \qquad$	
explained in term	is of the					A I
dot product that	make		Ø	0 - 2		· ///
up elemen (1,1).	500a :		10	$ \phi \phi$	-3/	
					H	
		+ + + + + + + + + + + + + + + + + + +				
	<u> </u>		+ + + + + + + + + + + + + + + + + + +			
		- AAL	$X = A' \in I$	IAL = A	$ \Delta_t = A_t $	
				-3 - 0	0	
		$ A^2 + =$	-3	0 -3	-3(-3)(9-0)=81	+
		/A + =				,+
				9 - 0		+
						<u> -</u>

Den grønne kopien beholdes av kandidaten./ The green copy is retained by the candidate.



Kandidatnr./Candidate no.: 171737



UiO : Universitetet i Oslo

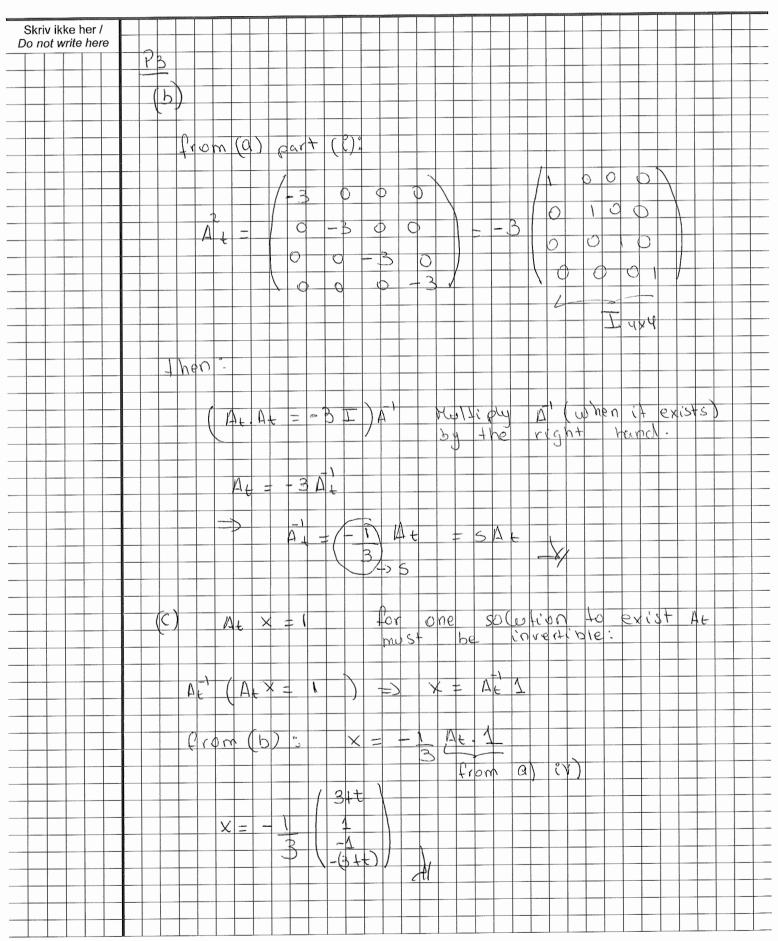
Eksamen i/Examination in:_____4___2O

Kandidatnr./Candidate no.: 17 1737



Side/Page: 10 0f 15

Dato/Date: 30/11/2018



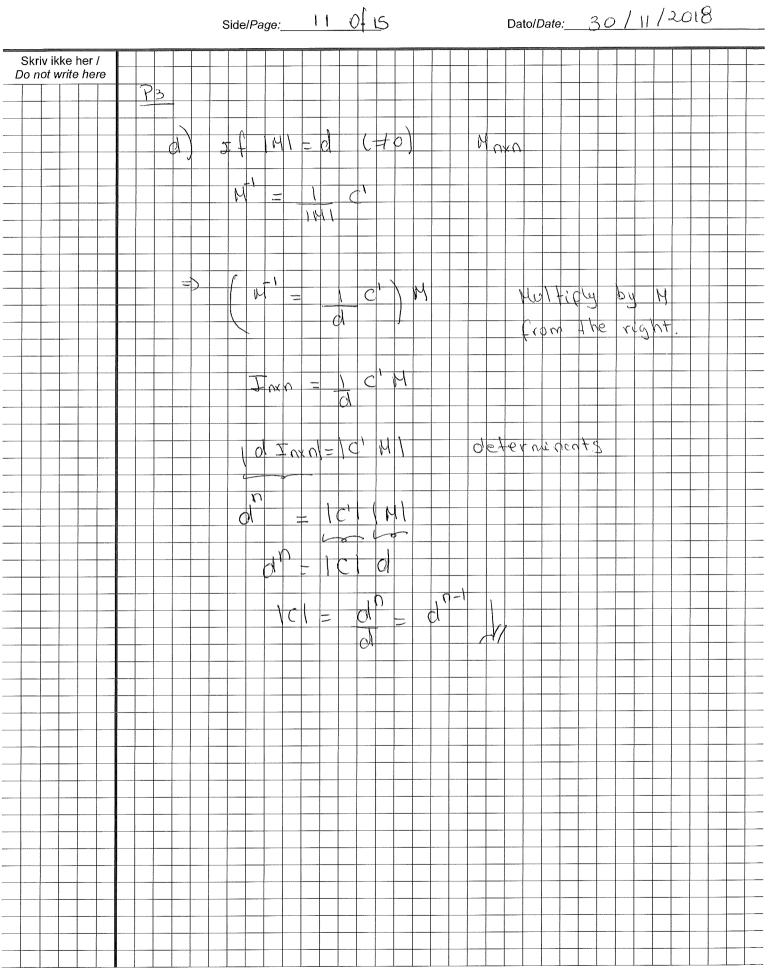
Eksamen i/Examination in:_

4120

idate no.: 171737

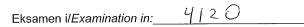
UiO: Universitetet i Oslo

Kandidatnr./Candidate no.:____



Den grønne kopien beholdes av kandidaten./ The green copy is retained by the candidate.

-



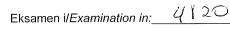
Kandidatnr./Candidate no.: 171737

UiO: Universitetet i Oslo

Side/Page: 12 04 15

Dato/Date:_____30 / 11 / 2018

Skriv ikke her / Do not write here																																	
	<u> </u>	99																															
		٥	2	et		C	><	5			1	l	i	5	CC	nl	rir	U	05	Ŀy	(仄	Ŧ	-91	- e	nt	(C	51	e.	a			
					ίŅ	C	× 1	4(У	, Y	Ĵ		Ş		t		C	~	- 2	٤	(ý -	×	•	-	ر بر) =	C			3	L)	i
		Δr	nd	•																													
			M	ax		U	Ý	, y)	5	, †	•	(·) 	- U	(-	Χ,]-	Y	ŀŻ	0		0	$\langle \rangle$	(0	<u> ۲</u>	1 4		
	a)		¥		1	J (·	- X	-) -) -	Y)	12	0	} (x	, l , _,	\bigcirc															
MISSING: The co			t is	pa	a0 Int	10	i N(ge		C	<u>n 0</u>	di 	τ¢	00	S	<u> </u>	;[2).													
of the "Lagrange c			ons U (, y)		_	h	- I	(0			g	(×	`	ر ۲ ک)														
Гhę "–1" is ina¢cura	-					U	<u>ا</u>		+	7		g_{x}^{i}	6	- 1		= (D				, , , , ,				~ Y	r	ļ,	X	. 1	-41			
he way g is defined. The rightmost equa		0	×						Υ 												X 					î	, , , , , , , , , , , , , , , , , , , 			J- J 			
rolds true. Same for derivative wrt. both x and y.]	s	2 2 3	2			U	y		+	h g	_ (Ĵ×	<u>.</u>	-1	2	0		5		U	(' 8		k	<u>`</u>]	U	y (1-	Х,	(-)	J)			¥/
			0	iζ	, h	Ń	-	-0	<u>c¥</u>	e v		ţ.	Ý		¥)																	
	1-:	1	16	<u>ر</u> ب)	- /	<u>t</u> ,	(c	- 1	4(r-x	, I	- Y))	-/	2_	(-	x)	ą.	h3	Ĺ	x	- })	- /	.y_	(-	2) -	ħ	s (y-)
Preferably, write (x,y) and (1-x, 1-y)	2	×	5	U	۱ X	+	hí	U _x		7	ł	<i>k</i> ,		h	3	1	0																
as it matters in this problem.		(<u>5</u>)		U	Ŀ	+	k	U	y	, _]	1	- 1	12	,	h =		:0																
The top of the next page	slac		es	r (ki hi		0 0	,		h, Lz	11 11			if if	-	C	-	u (<u> </u>	- V.	, 1-	.y) 0	2 2								
							<u>кз</u> <u></u> 45	2	0 0 0	, , ,		23 24 15	=	0 0 - 0		14 { [f f							x o y	N V V	1 5 1			Y				



Kandidatnr./Candidate no.: 171737

Dato/Date: 30/11/2018



UiO : Universitetet i Oslo

Side/Page:	13	OFIS
------------	----	------

Skriv ił Do not v								-				-																									
					ໍ່ເ(T	_0	2		ſ	1	1	•			γ.	ee	PI	ac	e			,	<u>y</u>	=	(1									
							- F -					+	<u></u>	~					Q)	7-			2	1	2							
							0		1	u,		9) -	-	h	[U.	1	- X		-4	5														_	
										*						· · · · ·				-1															-		
										u'			1	-	h	, ,	l		(1-		<u> </u>	1-))														
										_		27	2			`		<u> </u>		2)		2	,													
										u'	1		T	1-	.		U		12	· •	\square					6		2	١							_	
											1-	21	2				<u> </u>	r																			
													ì																								
									1)	he_	S	an	he.		Lo	r							-														
_														\ \	·			11)	· .							h,	=									
										Ľ	U'		× ,	↓)	-		- 1	U	J		×,	1-	7)					-	`								
											U		<u>۱</u>	1	$\overline{)}$		h,	11	y	1.																	
												3	Z	1 2)		<u> </u>		3	12	1 -	}															
								¥	i.i.i.	ø.		be		ws	0	د	he		+		0	. (0	Ne	J		0.1	h d		+	he				
								Ľ	(†]]	14				tr					ne			(1.15			~0											
																														À.							
						I	ł	١S		al	se			ha	t		1	ne		P	οίι	nt		-(12	Ĵ			w	:1	1	S	t	51	4		
						\mathcal{T}_i	ne		h	hq	٢ (10	99		L.		rli	£î.	bn	S		α.	5	1	or	5		es.		ť	10						
						0	10 Y	120			14		J	105			if			, y i	11		S	17	ĽS.	Íų		1)ne		ſ	0	25	Ŧ			
						\rightarrow	- Sec								1		<u> </u>									$ \cdot \rangle$			110-		`						
						(F		1	(11:	\$0			Sa	2+1	`S	ţi	62		+1	re		-7-	•	ρ.	C	<u> </u>		4	e		Ca	9			
						1	ha	VE	-		pc	ir	1+	5	1	the	£		sa	ť,	51	y		Ĵľ	e		6	571.	st	YC.	ir		14	but	-		
							10-	+	7	he	 	+	Ξ.	C		C																					
															~ (-ć	1					S.c		's	(0		2	0+	5	-				
												LS			22					, 1							40	e,	2								
So this * Likel	an	swe e f	er i	s a	bit rt i	"u is i	nex	pe nd	cte	d" :	and	1 m Irea	us c t	t be	re re	ad	wit	th o	tau rv	tio	n: hil₄	h th	ا م	act	SPT	iter		("1	n t	hic	C2	SP					
[]') a	ıddı	ess	es	thi	s pa	art	icul	lar	cas	e.							u U		, , ,	VV J				μοι						1110							
* With	out	th	at l	ast	sei	nte	hce	, i1	W	bul	dĿ	e g	uit	e a	fla	₩.							-													_	
																																				_	
+									<u> </u>																												
																ļ				<u> </u>				ļ													



Kandidatnr./Candidate no.:_

Dato/Date: 30/11/2018

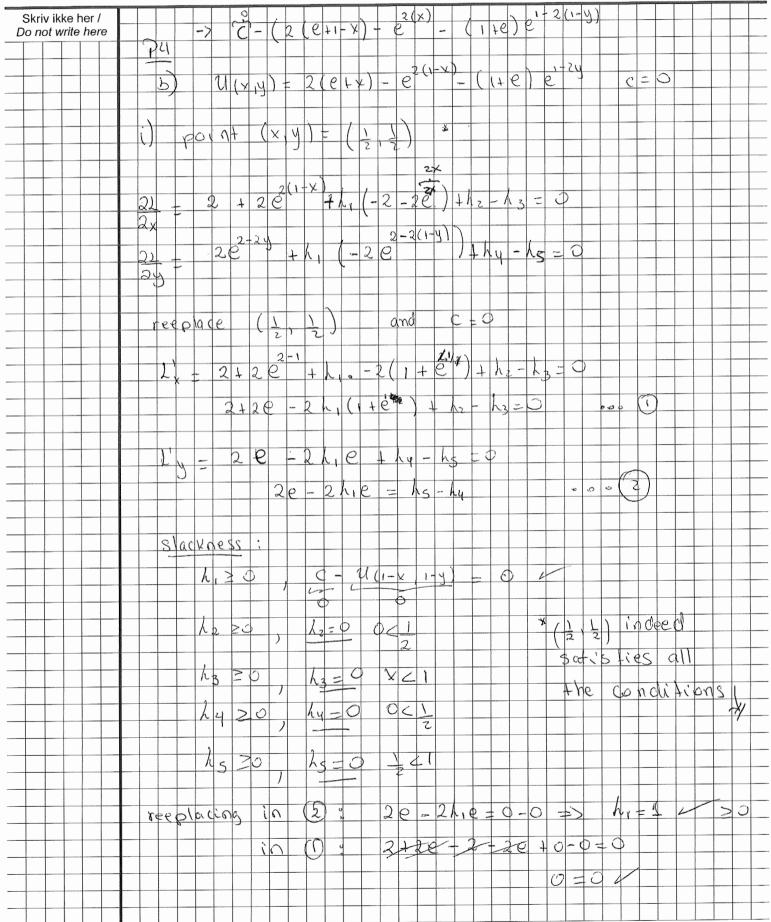
171737

4120



UiO: Universitetet i Oslo

Side/Pa		14	04	B		
0-	(2	10+1	- X)		2(X)



Eksamen i/Examination in:____

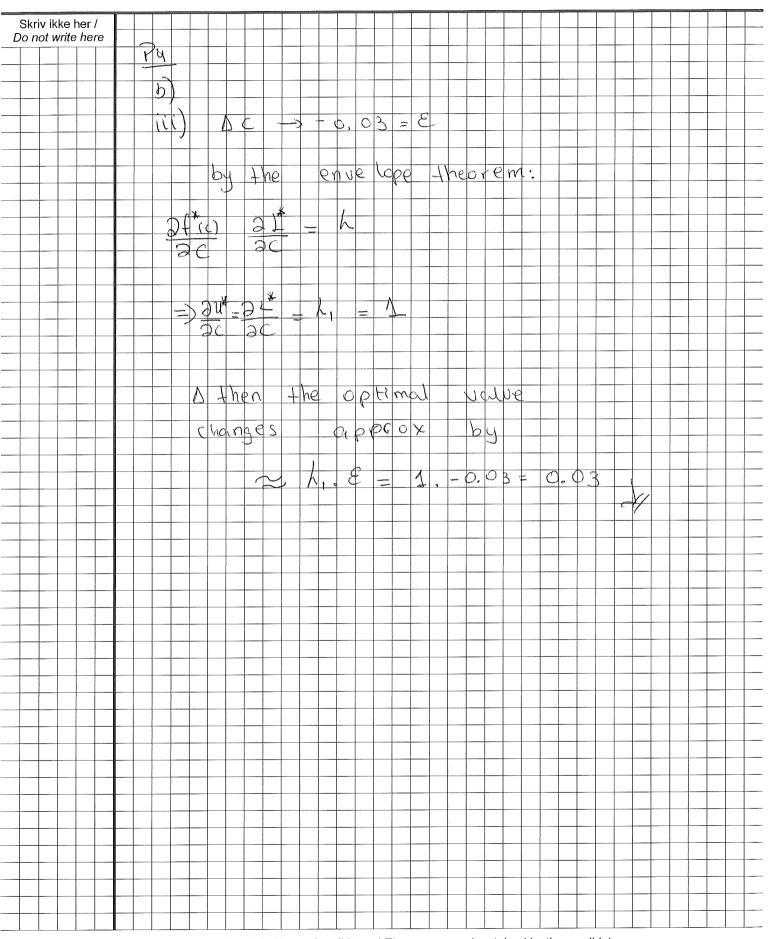
Kandidatnr./Candidate no.: 171737

UiO: Universitetet i Oslo

Side/Page: 15 0+15

Dato/Date:_____30/(1/2018

4120



Den grønne kopien beholdes av kandidaten./ The green copy is retained by the candidate.