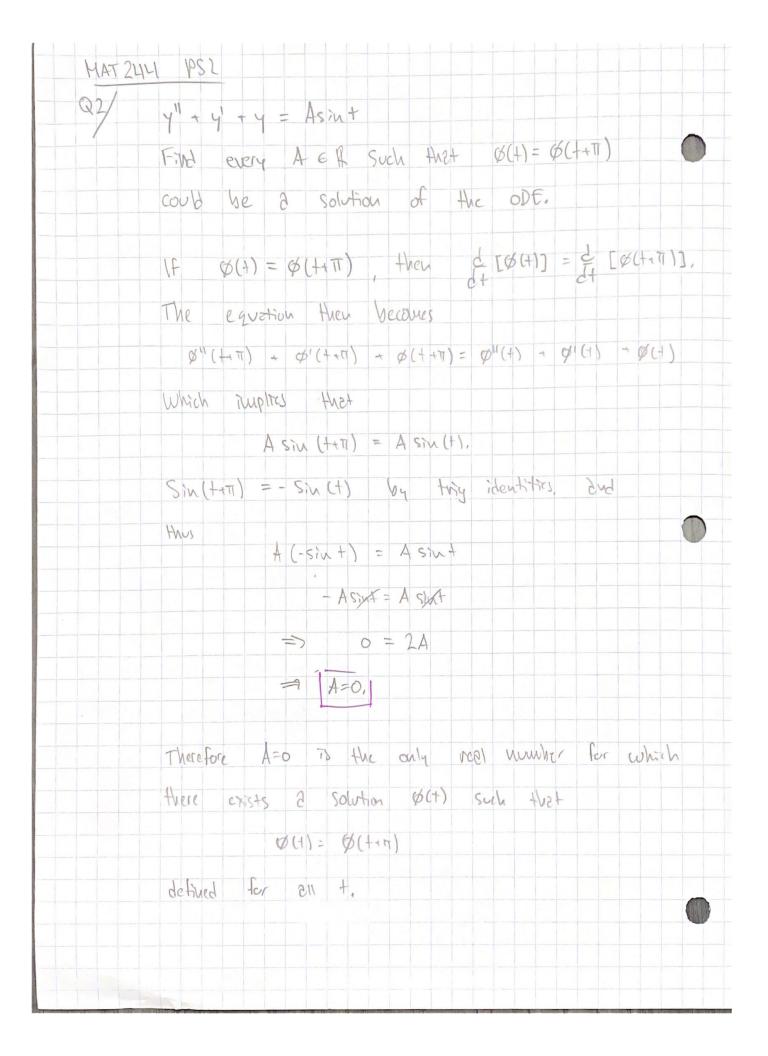
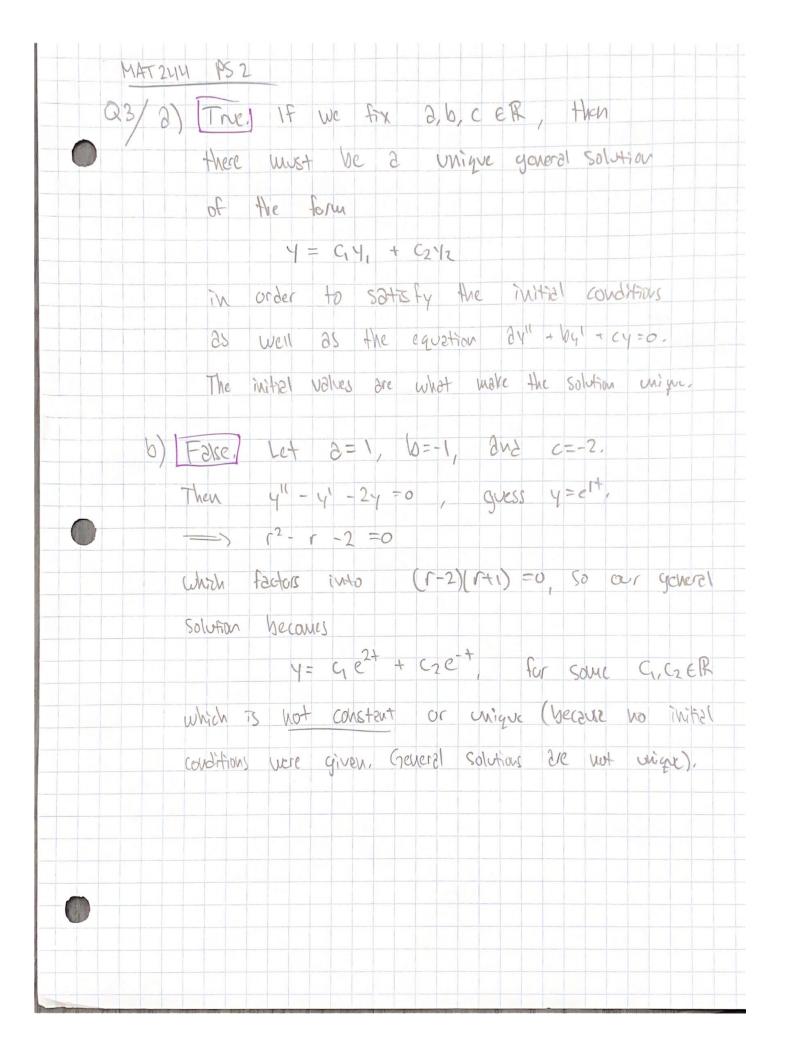
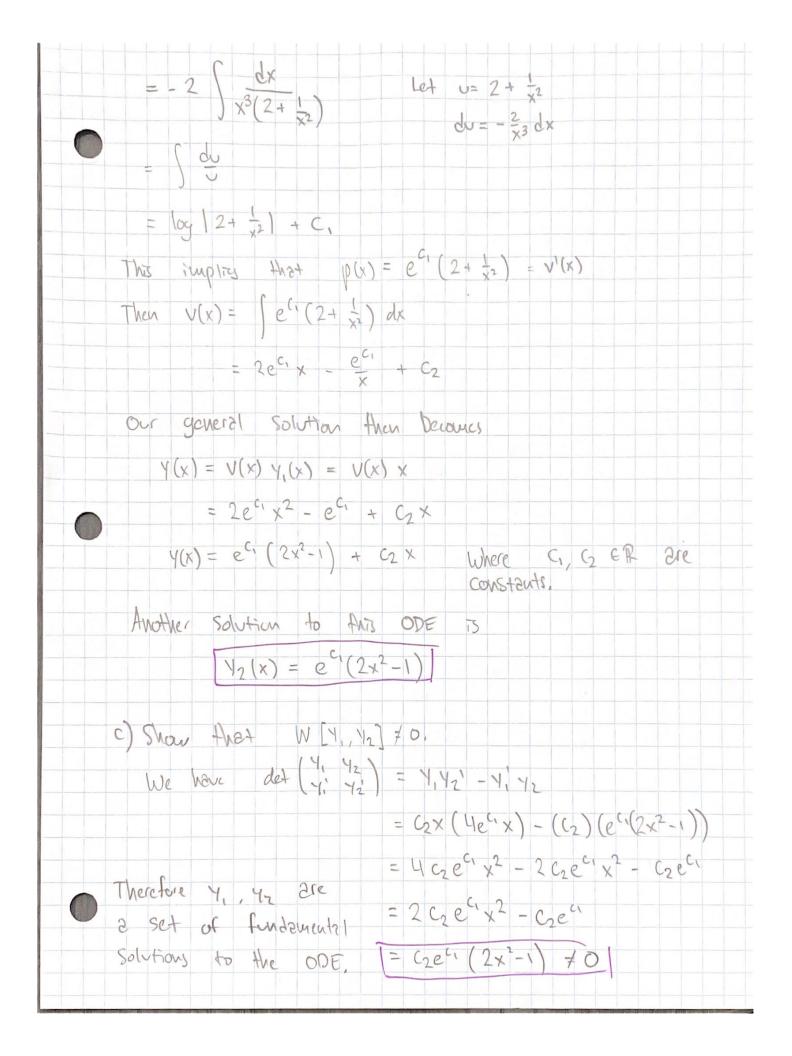
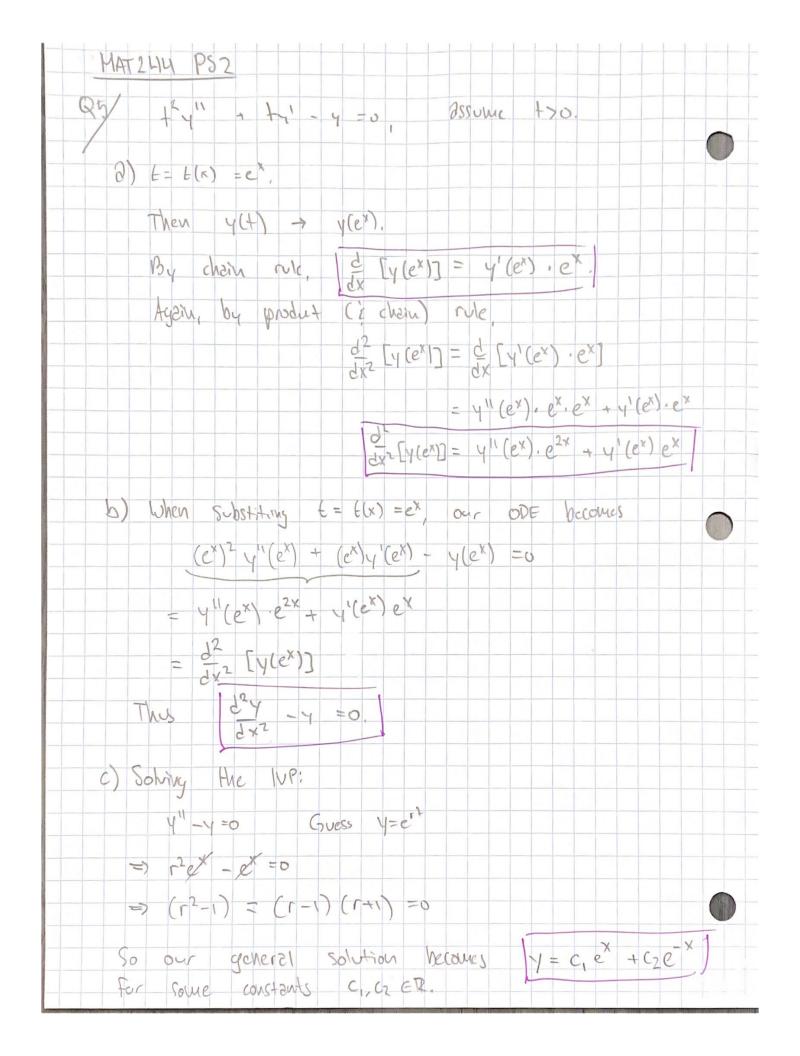
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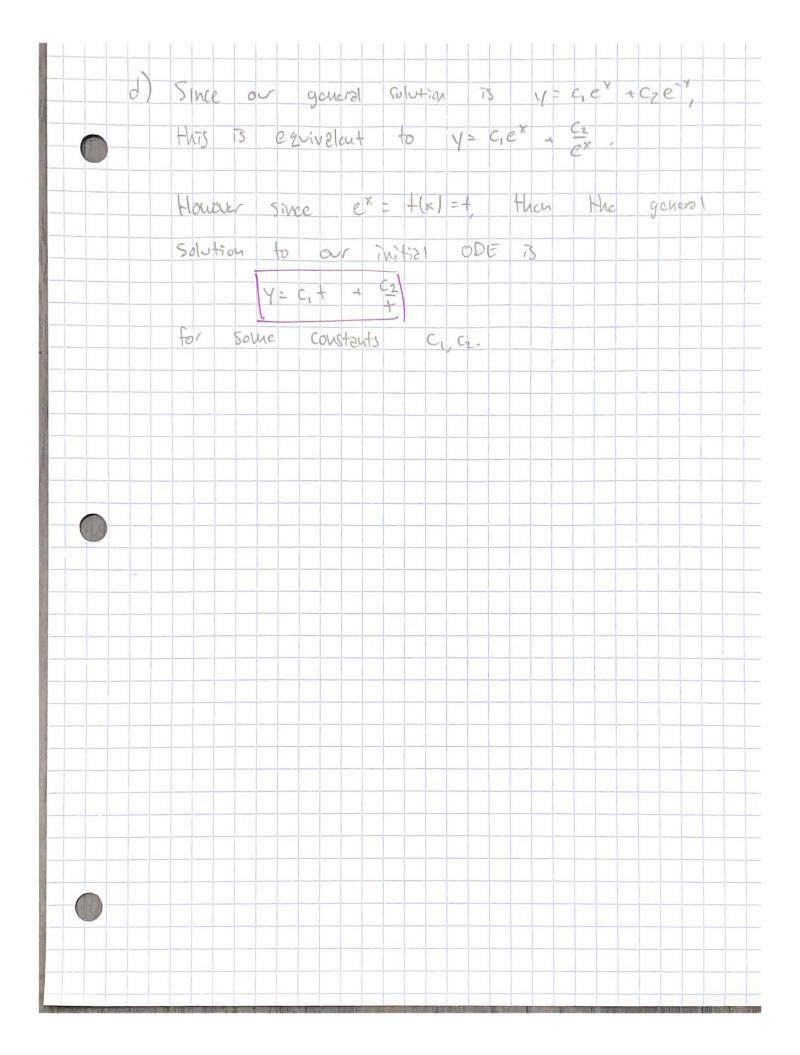




Q4/		(2)	(2+1)	y"	_	4x	41	+1	44 =	0,			
(5)	Y(x) = x		ther			1'(x	) = 1		24	4 1	(x)	=0,	
	Hence	1											
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	Thus y()	)=X	13	5	sol	utida	,	0 =	=0				
6)	,	= V(											
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	-> Substituti			DE!									
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(2 x <sup>2</sup>	+ X) V''(	x)	+ 2	V ()	() =	= Ō.							
Le-	+ p(x) =	Λ, (X											
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10	,				-X24	X,							450
	b(x)							C	1				
Th	en J Pi	x) dx	= 1	104	P(x)	1 =	-2		2×3+x				







MATZYY PSZ Q6/ (+2-2+) 4" + 4(+-1) 4" + 24 = e2+ a) Let  $F(+) = (+^2 - 2+)y' + (2+-2)y'$ Then  $d\Gamma = y''(t^2-2t) + y(2t-2) + y'(2t-2) + y(2)$ = y"(+2-2+) + 4 4 (+1) + 24  $=e^{2+1}$ Since dF is our initial ODF. b) dF = 1c2+ from part (2) Than  $\int \frac{dF}{dt} dt = \int e^{2t} dt$  $F(t) = \frac{1}{2}e^{2t} + C$  for some constant C which implies that  $|(+^2-2+)y| + (2+-2)y| = \frac{1}{2}e^{2+} + c$ 25 desired. c) Solve the equetion from pert (b). Let M(t,y) = (2+-2)yand  $N(+,y) = (+^2 + 2+)$ -This equation is exact since 2, M(+,4) = 2+-2 = 2, N(+,4).

Clearly, by the product rule,  $(+^2-2+)y'+(2+-2)y=\frac{d}{dt}[(+^2-2+)y]=\frac{e^{2t}}{2}+c.$ This implies  $(+^2-2+)y = (e^{2+}+c)d+$ = e2+ c, + c, for some c, c26 R. Our general solution is then given implicitly by (+2-2+) y = 1 e2+ + C1+ + C2 d) Find the unique solution if y(0)=1 and y'(0)=1? (02-2(0))(1) = 1 e2(0) + C1(0) + C2 0 = 1 + C2 Then C2 = - 4. Similarly, when we differentiate, Cimplicity), C[(+2-2+)4] = C [ 4 e2+ + (+ - +) (2+-2) y + (+2-2+) y' = = = = = + + c,  $(2(0)-2)(1) + (69-2(0))(1) = \frac{1}{2}e^{2(0)} + C_1$ -2 = \frac{1}{2} + C, So then C, = -4. our solution to the IVP is then implicitly given by (+2-2+)4 = = = e2+ -4+ - =

Notes	1 du	giving solution	Aus n y:	tiers	- 44 -	ty because	Buse the	
	morly		defined		- 24 ]		formally,	
	y(0)	suf	4(2)	Sec	both (	andefined	solutione.	
	Hence	1 2m	giving	the	Solution	ingo licit	-lq.	
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