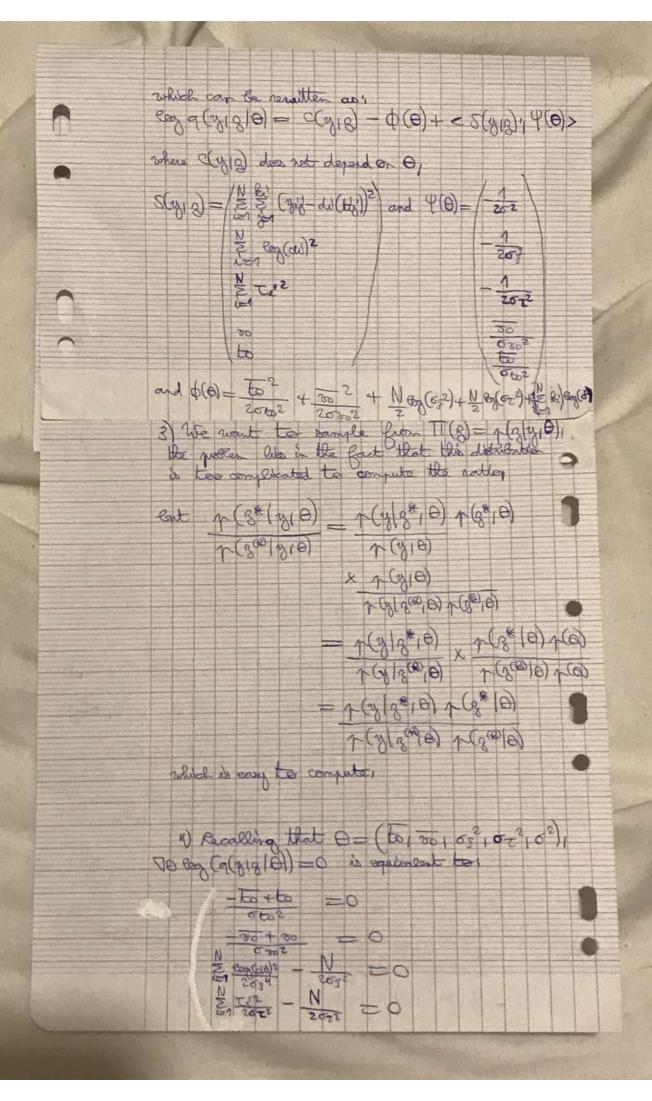
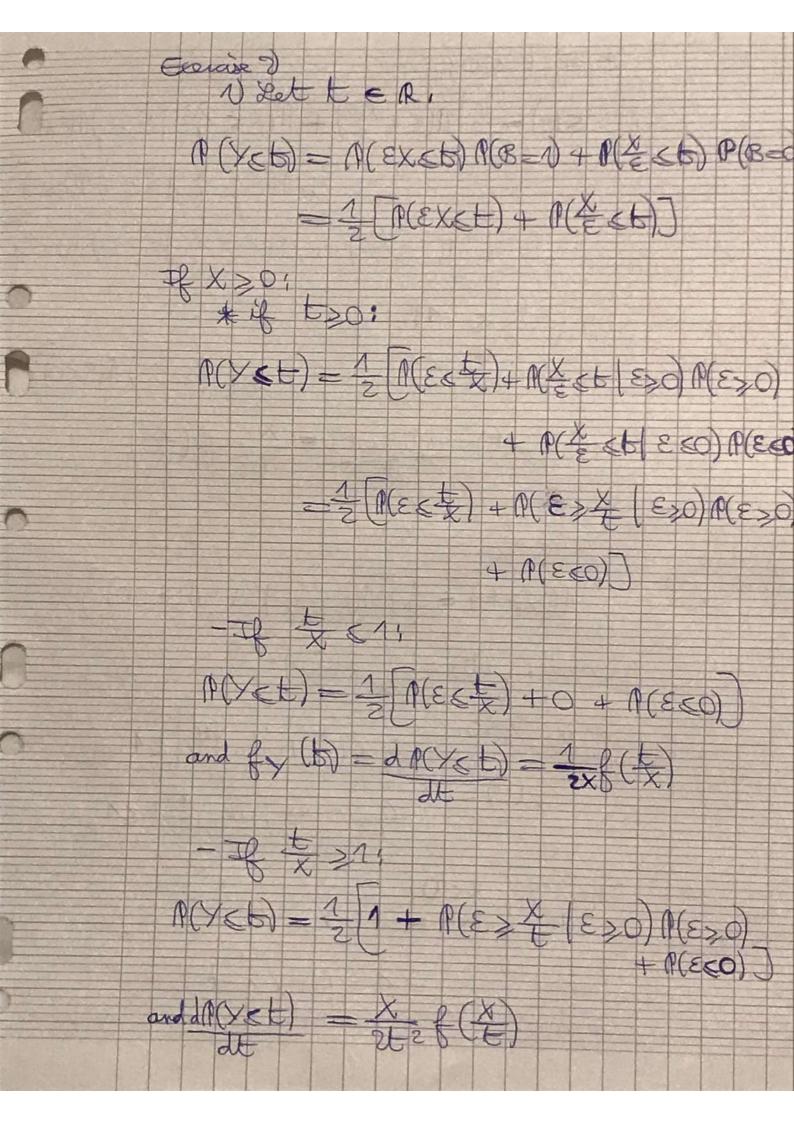
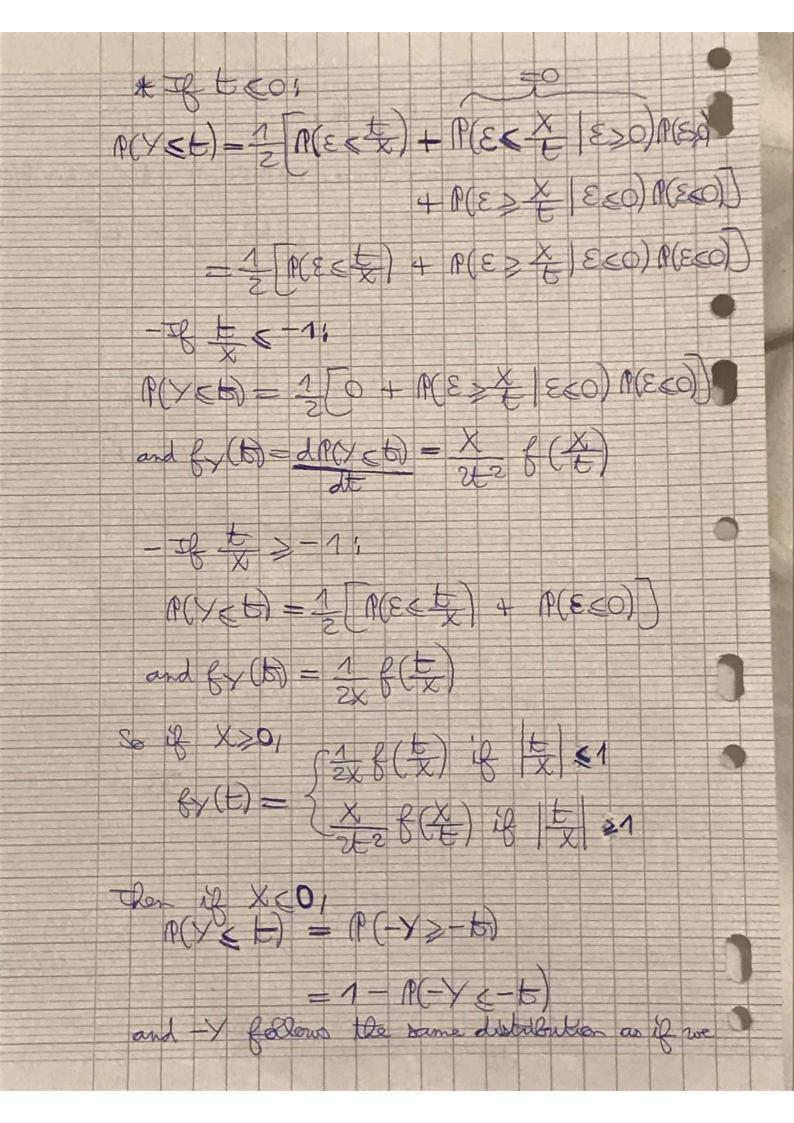
Homewood 31 Gailhail Cercie 1) 1) q(31810) = 1 (3/310) 1 (3/0) 1 (0) =1(0) (3morle) 11(11 mais 13:10) 1(3:10) by independence. Olen p(0) = p(0pm) 'x p(0i) = \$ (to 1 to 1 bto) \$ (50 1 50 1 0 50 x fw 1 (0 2) fw - 1 (0 2) fw - 1 (0 2) 1 (30010) = (to 1 to 0 to 0 (00 100 000) 1 (8/10) = 0 (eg (di) 10/652) 0 (Ti10/62) and 1 (yis | gil 0) = ((yis - di (tis) 1, 0, 02) where ("1 1 102) is the denotes of gaussian distribution with mean p and variance 52, en a (2/18/0) = en (1/870/0) II (II 1/2/2/8/0) (8/0)

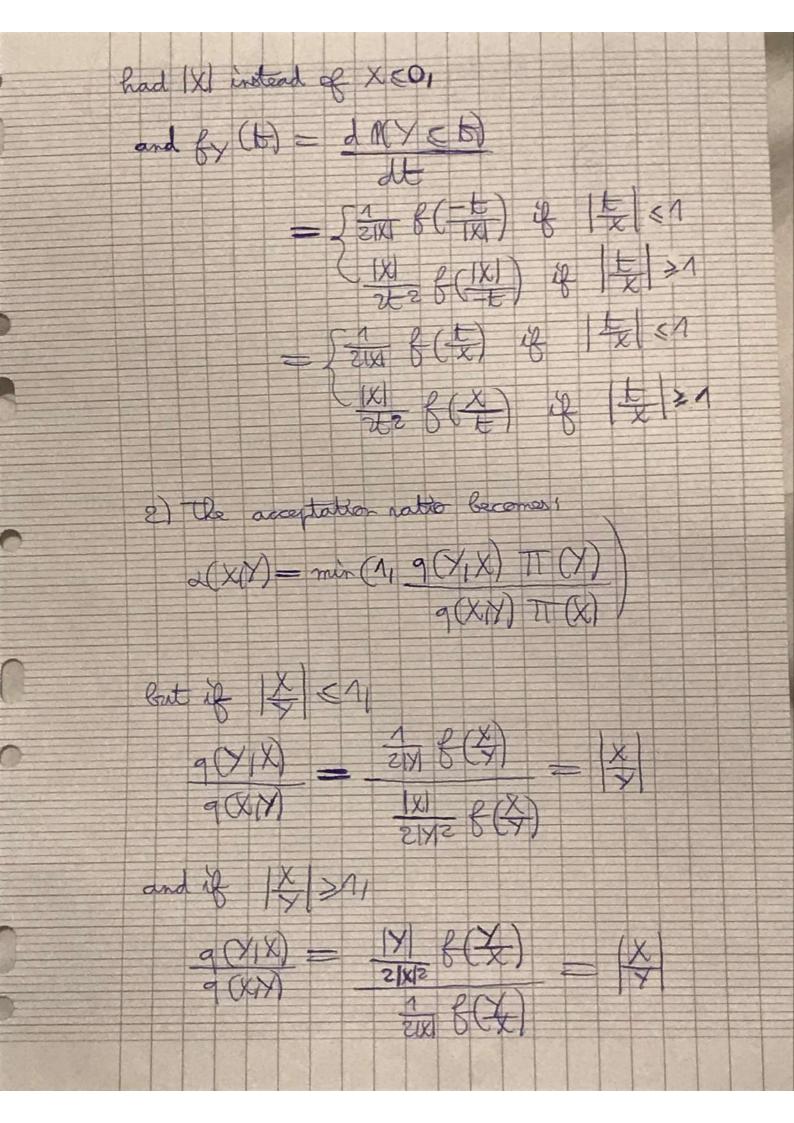


and 25 (200 - do (100)) 2 - (20) x 1 = 0 $\frac{1}{30} \frac{(R_{c} N)}{(R_{c} N)} = \frac{1}{30} = \frac{50}{30} = \frac{50}{30} = \frac{50}{30} = \frac{50}{30} = \frac{1}{30} = \frac{50}{30} = \frac{1}{30} = \frac{$ 52(81) 1 2 (44) - du(by))2 = 1 51 5) Eginen 82 = (51, Ti). 5i 7 (5i [7i | 3 pop 1 7 1 0) Ci ~ p(Ti/Si 1 870 1 2/0) rolere p(8: | Til 8 pop 12, 10) can be sampled wring Harting - Metropolis method with 1 (52 Ta) 8 ron 310) = 1 (3/8/18 mon 10) 1 (3/8/18 mon) 1 (Silo | Ci 3 mor 1 y (O) 1 (Ci 3 mor 1 y 10) x 1 (Til 8001 710) 1(9) 3:00 MONO) 7(30) 370,00 = 1(3: |3: 1 3 more) 1 (5: 10) the denotices on you to disappear in the rate thanks to independence up and down) and seconds they do not depend on gi 1 (32 31 300 0) 1 (50 0) which can be carily computed

In a similar rough Tr (Tri | Si 13 por 13/0) can be sampled with 1 (To | Stor 1 3 10) = 1 (41 8t (870 10) 1 (7 16) 1 (Till Si 8101 1910) 1 (Till Si 81010) 1 (Till) E) the same way; to (80) 2 (18) 2 (8) 2 (8) (9) (9) 20 (20) 1 (20) (20) (30) (3) (3) (6) where the flot can be sampled with the nation of (to 100 311 410) = 1 (2/8707 1810) 7(60) 7 (60 100 8x12/10) 1 (8/8/8/18/10) 1 (60) and the second with = 1 (4) 810 (8210) 1 (50 (0) 1(8) to(8)(4) 1 (3) 310 (8/18) 1 (50) (9) 1 (36) 10 (301810) A Black HMwG is loss costly , sampling one d-multioniste gaussian is loss costing than sampling example (and the same applies to whatever the majoral distribution closen).







Exercise 3) 1) P((Xx,1X) = A ((Xx) Yx) Yx < 2-1) = P(Yn e Ax | Xn e Ax | (Xle 1/2) He cz-1) P(Xn e Az | (Xe) Ye) where A = Ax X Ay = ACYNEAN (XnEAX) M(XnEAx (Yn-1) because Yn n fx (Xn10) and Xn fx (X14n) = P(Xne Ay (Xne Azel Yn-1) P(Xne Aze IYn-1) = P(Xn/n)EA Yn-D = PC(XNYN) EA (Xn-1/2-1) This is a Markov chain, Its transition bened is; A((2014)) A) = A((Xa+1/2+1)) EA((Xa/Yn)=(2017)) = SJABXIY (213) BYIX (213) dady e) P(Yr EALYR TRENT) = Spr (YneAl Xn=x/ Yk Vkcn-1) r (Xn=x / /k Vk) - Spr Pare Al Xn=2 r(Xn=2 /2-1)

= A (Ya ea (Ya-a) This is a Markor chair, Pania) = Pania Alyn=y = Sz Sz fx1x(zig)fx1x(zig)dady Invalance of Sfy (2) dy's Sy by (y) P(y) A) dy = Syfy (2) (S1 Syl fx1x(x/14)fx1x(x/14)dx/dy)
en en f(x/12) fx1x(x/14)dx/dy

dy ENT ENTER (2/19) By IX (2/19) daldy dy ERT EA Systaly) by IX (2/13/1) days = {x(21) } {(x1/3)} Sal Sal & (2/13/) daddy = Sal & (41) dy'

ERT EA EA

It is indeed immulant 3) We can compute fx (2) and fy (2) 8x (2) = SR VER 2 ear (- 2) (22 +2) MR+CDdg = 50 421 3 ear (-1) (22+4)) dy Doing a But integration by part! = 0 + 4x2 x 3 5 +00 1/2 exp(-1/2 (x2+10)dy and a second one 's = 0 + 12 5+00 - 1/2 ear (-3 (x244)) dy Changing ramable u= Jy(22+9) du = 10240 du = 12 (22+4)5/2 The brame way | 4 3 2 00 (2 42) npt (3) doc = 4 = 10 y 2 1 p+(4) Spean (-4 x2) da

Changing roundole u = Vy x du = Sy da 8x (2) = 4 = 20 1 1 1 1 1 1 1 1 1 1 we can then use the following cybles sampler, Export (XO1YO)

Bon n=1 to max the do

Xn n & X (' Yn-1) = f(Xn Yn-1) end In Bylx (Xn1) = g (Yn 1Xn) return the east comple, 4) S 11(2) de = 12 (HX) X 1 (X) In qualities 2 we showed that fy was a stationary distribution of Expr > 051 we can show simploiles that of its a stationary distribution of { X > 231 the previous integral can then be approached using a Monte Carlo method using the samples (xn) 201 10 12 NO H(X) N>400 S H(2) da