	Ex 1: Derive Bayes' rule:
	p(H:1X) = p(H:1X) by P3 $p(X)$
	= P(X/H;)P(H;) by p3 P(X)
	= p(X1H:) p(Hi) by rule of marginal prob. \[\sum_{p(X1He)} p(He) \]
	Ex 2: Show F L G H > p(F H,G)=p(F H)
(†)	p(F,G H) = p(F H)p(G H) by definition but also
(#)	p(F,G H) = p(F G,H)p(G H) by P3 $matching up (t) & (tt):$ $p(F G,H)p(G H) = p(F H)p(G H)$
	Support set of valves a r.v. can
	$x \sim binomial(n, \theta)$ $x \in \{0,, n\}$

Exercise: identify the kernel
Sellin exceptions
gamma kernel: xx-1 e-8x
Last 1974 years has drop a con-
The transfer of the second sec
That proposes without the de to the terms of
The second second second
Exercise: 00
Exercise: $0 \times x^{-1} e^{-\beta x} dx = ?$
Γ(α)
Bar
all space of the property of the state of th
* 72
Law of total expectation
E E(XIA)
= S[[x p(x10)dx]p(0)d0
= [x [p(x10) p(0) 60 dx
= Jx J p(x,p)d0 dx
= f x p(x) dx by rule of marginal prob.
= EX O

	€ los mas
for the same of th	Defin exchangeable (subscripts don't matter)
	Let p(y,,,yn) be the joint density of
	Y Yn. If p(y),, yn) = p(yn,, yn) for
	all permutations TT of &1,, no then
	Y, ,, Yn are exchangeable.
	Ex1: Urn with 2 red, I green
	p(Y = red, Y = green) = p(Y = red). p(Y = green Y = red)
	= 2/3 · 1/2
	= 1/3
	p(Y = green, Y2 = red) = p(Y = green) - P(Y2 = red 1 Y = green)
	= 1/3 .
	= 1/3
	Y, Y2 are exchangeable even
	though not independent.
	Ex.2:
	coin l is a fair coin
	coin 2 is double sided (heads only)
	$Pr(Y_1 = H) = 0.5$ recovery of provided in
	Pr(Y2 = H) = 1
	p (the plan 12 - yes market o'cle of a)
	p(0,1) = 0.5
	p(1,0) = 0
	The state of the s
	Y, Yz are nut exchangeable.

	4
1-1-32-4	Claim:
	If & ~ p(8) and Y, , Yn are conditionally
38	iid given &, then marginally (unconditional on
	D) Y,, Yn are exchangeable.
	Proof:
	p(y,,,yn) = I p(y),,yn (0) p(0) d0 by rule of morginal prob.
	= Str p(y; 10) { p(0)dd by cond! iid
	= S{TT p(ym, 10)} p(0) do products commute
	$= \rho(y_{\pi_1}, \dots, y_{\pi_n})$
	de Finetti's +hm:
	exchangeable Y,, Yn 4 n
	=> Y,, Yn 10 iid (for some parameter 0)
	and prior distribution p(D).
	· very cool because exchangeability is common!
	Y,, Yn -> from repeatable experiment >> sampled ul replacement >> 00 popri ulo replacement
	-> 00 boby mlo replacement