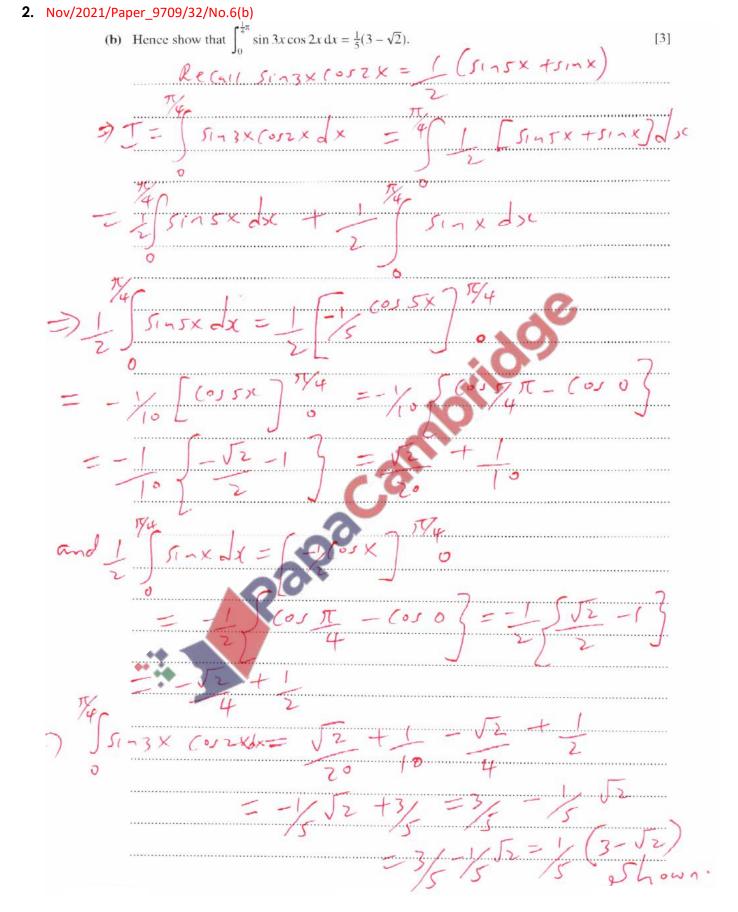
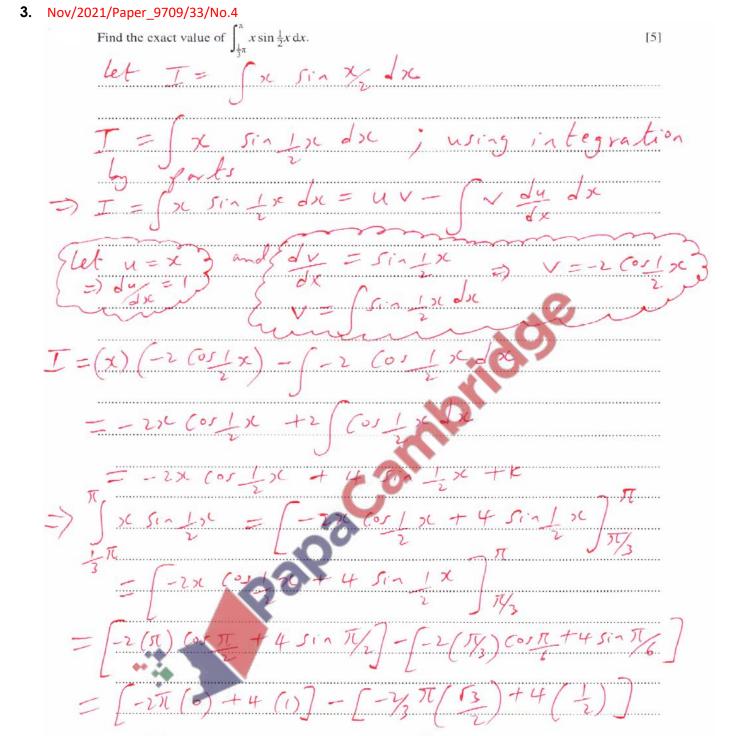
<u>Integration – 2021 A2 Nov P3 Math</u>

1. Nov/2021/Paper_9709/31/No.4

Using the substitution $u = \sqrt{x}$, find the exact value of	
$\int_3^\infty \frac{1}{(x+1)\sqrt{x}} \mathrm{d}x.$	[6]
(u=x2) =) du =1x2	
die 2	1
5) du= 1x-/2 dx => {du= 1 (1x) d X }
Now using integration by	
Sulstitution method.	in the de
=> ~ 1 . 2 Vx du = (ZXX C.
$\int \int u^2 + 1 \int x$	
$\frac{3}{6}$ $\frac{2}{6}$ $\frac{1}{6}$ $\frac{1}$	
$=$ $\begin{bmatrix} 1 \\ 1 \end{bmatrix}$	
) u +1	
	7 ~
= 7 [tan u] = 2 tan V	× J3
2 tan Joo - tan J	3
3 (X 11) VX	
-2 [tan-100 - tan-1]]
=2[[]-[]]=2(]=	2)T
	70 3
— TT	
7	





4. Nov/2021/Paper_9709/33/No.9

Let
$$f(x) = \frac{1}{(9-x)\sqrt{x}}$$
.

	F 43
(a) Find the x-coordinate of the stationary point of the curve with equation $y = f(x)$.	[4]
(a) Find the x-coordinate of the stationary point of the curve with equation y	

f(x) = 1	1
16-x) (x 10-x)-x/2-	- 4.5 (8x) +1.5(5x)=05x
(4-10)	
	<i>y</i> ×

$$f(x) = \frac{1}{9x^2 - x^2}$$
 $-4.5 + 1.5 \times = 0$

using quobient rule
$$=$$
 1.5x = 4.5

$$f'(x) = \sqrt{\frac{dy}{dx}} - \sqrt{\frac{dy}{dx}}$$

	/ /		1.5
for start	jonanty f	/x)=0	
		7	-> ~ - ?
(u=13)	V=9x/2-	x 12	7 11 - 3
=) dy =0 }}	dv = 4.500-12	3/2/2/	
cx ,		(2	

$$\left(9 \times \frac{1}{2} \times \frac{3}{2}\right) \circ - \left(1 \times \frac{1}{2} \times \frac{1}{2}\right) = 0$$

$$-\frac{4.5}{\sqrt{x}} + 1.5\sqrt{x} = 0$$

