## ACTIVITY #2 - Math 151 - Calculus II - Spring 2021

Professor/TA:	Sec:		RedID:		
NAME (printed):		Partners:			
(Family Name) (I	First Name)				
Areas between curves, <i>u</i> -sub and inverses	.10	<i>y</i>	·····	i	
<ul> <li>(a1) Graph (shading) the region bounded by the following three curves (in the first quadrant):</li> <li>(1) y = f(x) = x<sup>2</sup> + 1,</li> <li>(2) y = g(x) = 9 - 2x, and</li> <li>(3) x = 1.</li> <li>(a2) WITHOUT using the graph: Find the coordinates of ALL the intersection points between these curves. Label these points by P1, P2, etc. and graph them on the plot.</li> </ul>	9				
	8				
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	6			· · · · · · · · · · · · · · · · · · ·	
	5				····· <b>-</b>
	4				· · · · · · · · -
	3		······		
	2				
	1				
	0				<b>—</b> <i>x</i>
	-1 -1	0	1	2	3

- (b) Explain a way (or ways) to approximate the area without using calculus and explicit give the value of this approximation. Is your approximation an under- or an over-estimate? Explain.
- (c) (i) Write one (or two) *x*-integral(s) giving the *exact* area of this region and (ii) compute explicitly this area.

... more on the other side  $\longrightarrow$ 

(d) Now (i) write one (or two) y-integral(s) for the area of this region and (ii) compute explicitly this area. [Re-plot the curves so that you can annotate the functions you are using for the y-integral(s)].



- (e) Little birdy tells me: a similar question to this one will be included in Midterm#1 !!!(i) Write an explicit x-integral (or two) giving the area of the shaded region.
  - (ii) Write an explicit *y*-integral (or two) giving the area of the shaded region.

