ACTIVITY#5 (h) — Math 151 — Calculus II — Spring 2021

Professor/TA:		Sec:		RedID:
NAME (printed):			Partners:	
	(Family Name)	(First Name)		
• Partial Fractions: integration of rational functions (i.e., quotients of polynomials).				

(1) Compute $\int \frac{5x+11}{2x^2+9x+10} dx.$

(2) Compute $\int \frac{2x^2 + 12x - 8}{x^3 - 2x^2 - 8x} dx.$

(3) Goal: Compute $\int \frac{5x-2}{(x+3)^2} dx$. Here, there are not two different linear factors in the denominator.

(a) Can you find A and B (numbers) such that: $\frac{5x-2}{(x+3)^2} = \frac{A}{x+3} + \frac{B}{x+3}$? Does it work? Discuss!

(b) What about
$$\frac{5x-2}{(x+3)^2} = \frac{|\mathbf{A}|}{x+3} + \frac{|\mathbf{B}|}{(x+3)^2}$$
?

(c)
$$\int \frac{5x-2}{(x+3)^2} dx =$$

(4) How would you separate: $f(x) = \frac{x^4 + 3x^3 - 5x^2 + 6x + 7}{x^2(2x-1)^2(x^2+5)(x^2+3)^2}$ such that $\int f(x) dx$ can be integrated? You do not need to compute the coefficients in the numerator and you do not need to evaluate the integral. However, you MUST JUSTIFY each term in your decomposition (i.e., repeated/non-repeated, linear, quadratic, etc...). Note:

