MATH 102, Spring 2023 **Name:** _____
In class work 9 **Row and Seat**: _____

Mistakes are a fact of life. It is the response to the error that counts. NIKKI GIOVANNI

In class work 9 has questions 1 through 5 with a total of 12 points. This assignment is due at the end of the class period (9:55 AM). This assignment is printed on **both** sides of the paper.

1. Find the solution set to $\frac{2x+3}{4x+1} \leq 1$ by following these steps.

[1] (a) Use algebra tools to find an equivalent inequality of the form $\frac{P(x)}{Q(x)} \leq 0$, where P and Q are polynomials.

[1] (b) Find all x-intercepts and all VAs for $\frac{P(x)}{Q(x)}$.

[1] (c) Put all x-intercepts and VAs on to a number line.

1 (d) Build the chart with columns for the interval, the test number, evaluation at the test number, and the true/false value.

1 (e) Test each interval endpoint for inclusion or exclusion into the solution set.

1 (f) Express the solution set in either interval notation, pictorially, or set builder notation.

2. Find the vertex of each parabola.

1 (a) $y-2=5(x+1)^2$.

1 (b) $y=3x^2+2x+9$

1 (c) $y=x(1-x)$

3. Morwenna grows and sells organic mustard greens. The number q of bunches of greens she can sell in a day is related to the selling price of p dollars per bunch by $q = 20 - 2p$.

1 (a) Express the *revenue* R she gets for selling q bunches of greens for p dollars per bunch as a function of the selling price.

1 (b) Find the selling price p that will maximize Morwenna's daily revenue.

4. Sketch a pretty good graph of $y = (x-1)^2(x+1)^2$.

1 5. Given that P is a third degree polynomial that (a) has a zero with multiplicity of 2 at 5; (b) a zero with multiplicity 1 at -2; and $P(0) = 1$, find an equation for P.