Name: _____

Algebra II
5.2 Day 2

Goals:

- I can use synthetic division to divide polynomials.

Synthetic Division Steps:

1. Write the coefficients of the polynomial that is being divided. Write the constant *r* from $x - r$ in the box. Bring the first coefficient down.
2. Multiply the first coefficient by *r*, and write the product under the second coefficient.
3. Add the product and the second coefficient.
4. Repeat Steps 2 and 3 until you reach a sum in the last column.
5. Turn the numbers along the bottom into a polynomial.

(NOTE: Make sure that every level has a number! If there is a term missing put in a zero)

Example 1: Use synthetic division to find $(2x^3 - 13x^2 + 26x - 24) \div (x - 4)$

Solve for x: $(x - 4) = 0$

This is the *r* value that was talked about in step 1. $x = 4$

$2x^3 \quad -13x^2 \quad +26x \quad -24$

4	2	-13	26	-24
	↓			

Final Answer: _____

HW: Use synthetic division to find each quotient.

1. $(2x^3 + 3x^2 - 4x + 15) \div (x + 3)$
2. $(6b^4 - 8b^3 + 12b - 14) \div (x - 2)$
3. $(3x^3 - 8x^2 + 11x - 14) \div (x - 2)$
4. $(4a^4 + 2a^2 - 4a + 12) \div (a + 2)$

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Algebra II
5.2 Day 2

Practice with division

Directions: Simplify each equation using **both synthetic division** and **long division**

1. $(a^2 - 8a - 26) \div (a + 2)$

2. $(z^4 - 3z^3 + 2z^2 - 4z + 4)(z - 1)^{-1}$

3. $(6a^2 - 3a + 9) \div (\mathbf{3}a - 2)$ *only use long division on this one because of the 3!

4. $(g^4 - 3g^2 - 18) \div (g - 2)$