DUE: A-day Tuesday 10/20/15, B-day Wednesday 10/19/15

Pre-Calculus: Lesson 2.3 Quadratic Functions p. 124 #9,11, #15-23 odd, 29, 37, 39, 43 and 47.

Please complete the assignment using the "tri-fold" method (You may use www.calcchat.com to check your work):

Procedures and Problem Solving

Long Division of Polynomials **In Exercises 9–22, use long division to divide.**

✓ **9.** Divide $2x^2 + 10x + 12$ by $x + 3$.

10. Divide $5x^2 - 17x - 12$ by $x - 4$.

11. Divide $x^4 + 5x^3 + 6x^2 - x - 2$ by $x + 2$.

12. Divide $x^3 - 4x^2 - 17x + 6$ by $x - 3$.

13. Divide $4x^3 - 7x^2 - 11x + 5$ by $4x + 5$.

14. Divide $2x^3 - 3x^2 - 50x + 75$ by $2x - 3$.

✓ **15.** Divide $7x^3 + 3$ by $x + 2$.

16. Divide $8x^4 - 5$ by $2x + 1$.

✓ **17.** $(x + 8 + 6x^3 + 10x^2) \div (2x^2 + 1)$

18. $(1 + 3x^2 + x^4) \div (3 - 2x + x^2)$

19. $(x^3 - 9) \div (x^2 + 1)$

20. $(x^5 + 7) \div (x^3 - 1)$

Using Synthetic Division **In Exercises 23–32, use synthetic division to divide.**

23. $(3x^3 - 17x^2 + 15x - 25) \div (x - 5)$

29. $(x^3 + 512) \div (x + 8)$

Verifying the Remainder Theorem **In Exercises 37–42, write the function in the form $f(x) = (x - k)q(x) + r(x)$ for the given value of k. Use a graphing utility to demonstrate that $f(k) = r$.**

	Function	*Value of k*
37.	$f(x) = x^3 - x^2 - 14x + 11$	$k = 4$
38.	$f(x) = 15x^4 + 10x^3 - 6x^2 + 14$	$k = -\frac{2}{3}$

	Function	*Value of k*
39.	$f(x) = x^3 + 3x^2 - 2x - 14$	$k = \sqrt{2}$
40.	$f(x) = x^3 + 2x^2 - 5x - 4$	$k = -\sqrt{5}$

Using the Remainder Theorem In Exercises 43–46, use the Remainder Theorem and synthetic division to evaluate the function at each given value. Use a graphing utility to verify your results.

43. $f(x) = 2x^3 - 7x + 3$

(a) $f(1)$ (b) $f(-2)$ (c) $f\left(\frac{1}{2}\right)$ (d) $f(2)$

Using the Factor Theorem In Exercises 47–50, use synthetic division to show that x is a solution of the third-degree polynomial equation, and use the result to factor the polynomial completely. List all the real solutions of the equation.

	Polynomial Equation	*Value of x*
47.	$x^3 - 7x + 6 = 0$	$x = 2$