Pre-Calculus Name _____

Quiz Review 2.5 – Answers Per. _____

1) Find a polynomial of a degree 4 that has the given zero(s). Give the equation in standard form.

a) x = 0, 4, 2i

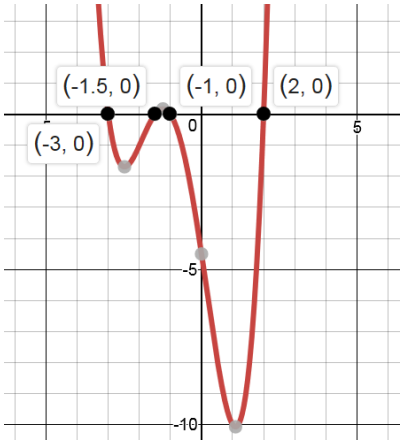
$x^4 - 4x^3 + 4x^2 - 16x$

2) Divide $p(x) = 2x^4 + 7x^3 - 4x^2 - 27x - 18$ by $x^2 + x - 6$ and state if it is a factor of the polynomial. If it is a factor, find the remaining zeros and sketch the graph.

$(2x^2 + 5x + 3)(x^2 + x + 6), \quad Yes\ a\ factor$

$(2x+3)(x+1)(x-2)(x+3)$

$x = -\frac{3}{2}, -1, 2, -3$



3) Divide $x^3 - 5x^2 - 11x + 8$ by $x + 2$ and state if it is a factor of the polynomial. If it is a factor, find the remaining zeros and sketch the graph.

$x^2 - 7x + 3 + \frac{2}{x+2}, \quad not\ a\ factor$

4) Use synthetic division to show that √3 is a zero of the polynomial f(x) = $x^3 - 2x^2 - 3x + 6$. Find the remaining zeros.

$\sqrt{3}$	1	-2	-3	6
		$\sqrt{3}$	$-2\sqrt{3}+3$	-6
	1	$-2+\sqrt{3}$	$-2\sqrt{3}$	0

$x = \pm\sqrt{3}, 2$

5) Prove that the given zero is a zero then find the remaining zeros.

$p(x) = x^4 - 2x^3 - 14x^2 + 22x + 33$ Given $x = \sqrt{11}$

$x = \pm\sqrt{11}, 3, -1$

6) Use the quadratic formula to solve $x^2 + 6x + 10 = 0$

$x = -3 \pm i$

7) You need to use a graphing calculator to find one zero or more and then use synthetic division to show x is a solution of the polynomial equation. Use the appropriate technique to find the rest of the zeros. $f(x) = x^3 - 3x^2 + 13x - 11$

$x = 1 \pm \sqrt{10}i, 1$

8) You need to use a graphing calculator to find one zero or more and then use synthetic division to show x is a solution of the polynomial equation. Use the appropriate technique to find the rest of the zeros. $f(x) = 3x^4 + x^3 - 3x^2 + 9x - 10$

$x = \frac{1}{3} \pm \frac{\sqrt{14}}{3}i, 1, -2$

9) If 3 + 2i is a zero of a function *g(x)*, what is another zero of *g(x)*? Why?

$3 - 2i$ Because complex zeros always occur in conjugate pairs.

10) Find a polynomial with integer coefficients that has zeros 4, 3i. Write your answer in standard form.

$x^3 - 4x^2 + 9x - 36$