Polynomial Functions   Name _____
Review WS 2

1. Graph $f(x) = 2(x + 2)^2(x + 4)^2$

2. One factor of $f(x) = x^3 - 8x^2 + 5x + 14$ is $(x - 2)$. Factor completely.

3. Find all the roots of $f(x) = x^4 - 3x^3 + 3x - 1$ if -1 and 1 are zeros.

4. Find all the roots: $f(x) = 2x^3 - 3x^2 - 11x + 6$

5. Find all the roots: $f(x) = x^5 - 3x^4 - 3x^3 + 9x^2 - 4x + 12$

6. Write the quadratic equation having roots ½ and ¾.

7. Write the cubic function having roots 3 and 2 + i

8. Write the polynomial function with roots 2, $\pm \sqrt{3}$.

9. Write the polynomial function with roots -1, 3 + i.

10. Given: $f(0) = -15$, $f(-3) = 0$, $f(-1/2) = 0$, $f(1) = -48$, and $f(5) = 0$
      a) name the zeros
      b) name the factors
      c) name the y-intercept
      d) name another point on the graph of the function

11. Given a function $h(x) = x^4 - 6x^3 + 6x^2 + 24x - 40$ and 3 + i is a zero. Find the remaining zeros.

Answers:
1) x-intercepts @ $(-4, 0)$ bounce and $(-2, 0)$ bounce
   y-intercept @ $(0, 128)$
   relative maximum @ $(-3, 2)$
   both ends go up
2) $f(x) = (x - 2)(x - 7)(x + 1)$

3) x = ±1, $\dfrac{3 \pm \sqrt{5}}{2}$

4) x = -2, ½, 3
5) x = 3, ±2, ±i
6) $y = 8x^2 - 10x + 3$
7) $y = x^3 - 7x^2 + 17x - 15$
8) $f(x) = x^3 - 2x^2 - 3x + 6$
9) $f(x) = x^3 - 5x^2 + 4x + 10$
10) a) $-3, -1/2, 5$ b) $(x + 3)(2x + 1)(x - 5)$ c) $(0, -15)$ d) $(1, -48)$
11) ±2, 3±i