Answers to Chapter 2 Review

2 – 1: <u>Quadratic Functions</u>
    1. Axis of symmetry $x = -2$ See graph in classroom
        Vertex $(-2, 9)$
        y −int $(0, 5)$
        x −ints $(-5, 0)$ and $(1, 0)$
    2. Axis of symmetry $x = -2$ See graph in classroom
        Vertex $(-2, -3)$
        y −int $(0, -1)$
        x −ints $(-2 \pm \sqrt{6}, 0)$; $(.45, 0)$ and $(-4.45, 0)$
    3. $y = -\frac{1}{2}(x - 3)^2 + 4$
    4. $y = -\frac{24}{49}\left(x + \frac{1}{4}\right)^2 + \frac{3}{2}$
    5. $f(x) = (x - 4)^2 - 36$
    6. $f(x) = 3(x + 3)^2 + 2$
    7. $f(x) = -2(x - 2)^2 - 3$

2 − 2: <u>Polynomial Function of Higher Degree</u>
    1. See graph in classroom
    2. See graph in classroom
    3. See graph in classroom
    4. Zeros: -1 and 1 (multiplicity 2)   See graph in classroom
    5. Zeros: $\pm 3, \pm 2$ See graph in classroom

2 − 3: <u>Polynomial Long and Synthetic Division</u>
    6. a) $x^3 + \frac{6}{x-10}$ b) No, there is a remainder   c) $h(10) = 6$
    7. a) $x^3 - 4x^2 - 3x - 8$ b) Yes, there is no remainder   c) $h\left(-\frac{3}{2}\right) = 0$
    8. zeros: $-2, -3 \pm 2i$; remaining factors $(x - (-3 + 2i)), (x - (-3 - 2i))$
    9. zeros: $\frac{5}{3}, \frac{-5 \pm \sqrt{21}}{2}$; remaining factors $\left(x - \left(\frac{-5 + \sqrt{21}}{2}\right)\right), \left(x - \left(\frac{-5 - \sqrt{21}}{2}\right)\right)$
    10. zeros: $\pm\sqrt{7}, \pm\sqrt{2}, 5$
    11. zeros: $-2, \pm 2i, \pm i\sqrt{5}$
    12. zeros: $-3 \pm i\sqrt{2}, 1, 2$
    13. zeros: $1 \pm 3i, \pm 2i$

$2 - 5$: <u>Zeros of Polynomial Functions</u>

14. zeros: $-2, -\frac{1}{2}, 3$

15. zeros: $0, 2 \pm \sqrt{6}$

16. zeros: $2, 2 \pm i$

17. zeros: $-\frac{1}{2}, 1, \pm 2i$

18. zeros: $\pm i\sqrt{5}, \pm i\sqrt{3}, \pm\sqrt{3}$

19. $x^4 - 4x^3 + x^2 - 4x$

20. $x^4 - 9x^3 + 39x^2 - 89x + 78$