**HOMEWORK 5-1 TO 5-4**

**Homework 5-1: Complete your assignment on a separate sheet of paper. Show all work.**

1. Classify each polynomial by degree and by number of terms.
2. b.
3. Rewrite the polynomial in standard form.
4. b.
5. Describe the shape, turning points and end behavior of the graph for each function.
6. b.
7. **Error Analysis.** Your friend claims the graph of the function has only one turning point and the end behavior is up and down. Is your friend right? If not describe the error your friend made and give the correct number of turning points and correct end behavior.

**Homework 5-2 Part 1: Complete your assignment on a separate sheet of paper. Show all work.**

1. Find the zeros for each function.
2. b. c.
3. Write a polynomial function in standard form with the zeros -2, 1, -1.
4. Error Analysis. Your friend says a function with zeros 3 and -1 is Is your friend correct? If not find and correct the error.

**Homework 5-2 Part 2: Complete your assignment on a separate sheet of paper. Show all work.**

1. Find the zeros of each function. State the multiplicity of multiple zeros.
2. b.
3. Find the relative maximum and relative minimum of the graph of each function.
4. b.
5. A rectangular box is units long and units wide, and units high. What is the volume expressed as a polynomial?

**Homework 5-3: Complete your assignment on a separate sheet of paper. Show all work.**

1. Solve each equation by factoring.
2. b.
3. d.
4. Find the real solutions of by graphing.
5. The Johnson twins were born 2 years after their older sister. This year, the product of the three sibling’s ages is exactly 4558 more than the sum of their ages. How old are the twins?

**Homework 5-4 Part 1: Complete your assignment on a separate sheet of paper. Show all work.**

1. Divide using long division

a.

1. Determine whether is a binomial factor of .

**Homework 5-4 Part 2: Complete your assignment on a separate sheet of paper. Show all work.**

1. Divide using synthetic division.
2. Use synthetic division to completely factor given that ( is a factor.
3. When a polynomial is divided by , the quotient is with remainder of -26. Find the polynomial.

**HOMEWORK 5-5 TO 5-9**

**Practice 5-5 Part 1: Complete your assignment on a separate sheet of paper. Show all work.**

1. Use the rational root theorem to list all the possible roots. Then find the rational roots.
2.

**Practice 5-5 Part 2: Complete your assignment on a separate sheet of paper. Show all work.**

1. Write a polynomial function with rational coefficients so that has the given roots.
2. -10*i*
3. 2 and 3*i*
4. -2*i* and
5. What does Descartes’ Rule of signs say about the number of positive real roots for each function?

**Practice 5-6: Complete your assignment on a separate sheet of paper. Show all work.**

1. Find the number of roots for each equation.

**Practice 5-8: Complete your assignment on a separate sheet of paper. Show all work.**

1. Find a polynomial function whose graph passes through each set of points.
2. (-1, 8), (5, -4) and (7, 8)
3. (-1, -15), (1, -7) and (6, -22)
4. (-1, 9), (0, 6), (1, 5) and (2, 18)

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|  | **Year** | **Price (thousands** |
|   | 1991 | 149 |
|   | 1995 | 158 |
|   | 2000 | 207 |
|  |   |   |

1. For the data below that examines World Population, compare two models and determine which one best fits the data. Which model seems more likely to represent the data set over time?

**Practice 5-9: Complete your assignment on a separate sheet of paper. Show all work.**

1. Find all the real zeros of each function.
2. Determine the equation of a cubic function obtained from the parent function after the following transformations.
3. Vertical stretch by a factor of 3, reflection across the *x*-axis, vertical translation 2 units up and horizontal translation 1 unit right.
4. Vertical compression by a factor of , vertical translation of 4 units down and a horizontal translation of 2 units left.
5. Find a quartic function with the given *x*-values as its only real zeros.
6. and