

ANSWERS: PRACTICE PROBLEMS FOR TEST College Algebra (Chapter 1 and Sections 2.1, 2.2, and 7.1)

Chapter 1

1.  $P(x) = 3x^2 - 10x + 6$

2. Use synthetic division to divide the following polynomials.

$$\frac{x^3 - 3x^2 + 4x - 6}{x - 2} = x^2 + 3x + 10x + 16 = \frac{-16x}{x - 2}$$

3. Given the equation below.

$$2x^2 + x^2 - 2x^2 - 8x - 40 = 0$$

a. Make a chart showing the possible combinations of positive, negative, and normal roots of the equation.

| positive | negative | normal | total |
|----------|----------|--------|-------|
| 1        | 1        | -1     | 1     |
| 1        | 1        | 1      | 3     |

b. List all the possible rational roots of the equation.

$$\pm 40, \pm 20, \pm 10, \pm 8, \pm 5, \pm 4, \pm 2, \pm 1, \pm \frac{1}{2}, \pm \frac{1}{4}$$

c. Use synthetic division and the information from above to find all the rational roots of the equation.

$$2x^2 + x^2 - 2x^2 - 8x - 40 = 0$$

$$\text{RATIONAL ROOTS ARE } \begin{matrix} x = -2 \\ x = -5 \end{matrix} \quad \text{THEORETICAL ROOTS ARE } x = -2, -5$$

CHAPTER 6

$$A = \begin{bmatrix} 4 & 5 & 6 \\ 1 & -1 & 0 \end{bmatrix} \quad B = \begin{bmatrix} 0 & 0 & -5 \\ -3 & 0 & -4 \\ 0 & 2 & 2 \end{bmatrix} \quad C = \begin{bmatrix} 0 & -2 & 0 \\ 2 & -3 & 0 \end{bmatrix}$$