Name: _____ Date: _____

Chapter 2 Prerequisite Skills

Evaluate Functions

1. Given $P(x) = x^4 - 3x^2 + 5x - 11$, evaluate.
   a) $P(-2)$
   b) $P(3)$
   c) $P(-1)$
   d) $P\left(\dfrac{1}{4}\right)$

Simplify Expressions

2. Expand and simplify.
   a) $(x^3 - 2x^2 - 3x + 4)(2x - 1) + 3$
   b) $(3x^3 + x^2 - 4x - 2)(x + 3) - 5$
   c) $(x - \sqrt{6})(x + \sqrt{6})$
   d) $(x - 2\sqrt{7})(x + 2\sqrt{7})$
   e) $(x + 3 - \sqrt{5})(x + 3 + \sqrt{5})$

Factor Expressions

3. Factor fully.
   a) $x^2 - 49$
   b) $64a^2 - 121b^2$
   c) $3m^2 - 75n^2$
   d) $5x^4 - 5$

4. Factor each trinomial.
   a) $b^2 - 2b - 15$
   b) $m^2 - 9m + 18$
   c) $2a^2 - 5a - 12$
   d) $3x^2 - 17x + 10$
   e) $6x^2 - 5x - 4$
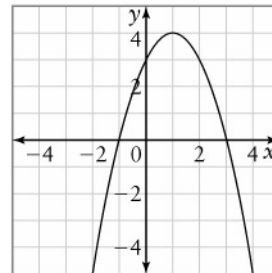
Solve Quadratic Equations

5. Solve by factoring.
   a) $x^2 - 2x - 35 = 0$
   b) $5x^2 - 16x + 3 = 0$
   c) $18a^2 - 50 = 0$
   d) $6x^2 - 33x = 18$
   e) $10x^2 - 7 = 9x$

6. Use the quadratic formula to solve. Round answers to one decimal place.
   a) $3x^2 - 5x + 1 = 0$
   b) $2x^2 + 6x - 7 = 0$
   c) $7x + 13 = 4x^2$

Determine Equations of Quadratic Functions

7. Determine an equation for the quadratic function, with the given zeros, that passes through the given point.
   a) zeros: –2 and 5; point (1, –12)
   b) zeros: 6 and 0; point (–2, –32)
   c) zeros: $-\dfrac{5}{2}$ and $\dfrac{1}{3}$; point (–1, 48)

Determine Intervals From Graphs

8. For the graph of each polynomial function,
   i) identify the x-intercepts
   ii) write the interval(s) for which the graph is above the x-axis and the interval(s) for which the graph is below the x-axis.
   a)

   b)