

BLM 3–3 Section 3.1 Extra Practice

1. **a)** Not a polynomial; the exponent of the variable is not a whole number: $\frac{1}{x} = x^{-1}$ **b)** degree = 2

c) degree = 6 **d)** Not a polynomial; the exponent of the variable is not a whole number: $\sqrt[3]{x} = x^{\frac{1}{3}}$

2. **a)** -1; 3 **b)** 9; 5 **c)** 3; 1 **d)** -2; 9

3. **a)** odd; neither **b)** even; minimum **c)** odd; neither **d)** even; maximum

4. **a)** 3; domain: $\{x \mid x \in \mathbb{R}\}$; range: $\{y \mid y \in \mathbb{R}\}$

b) 2; domain: $\{x \mid x \in \mathbb{R}\}$; range: $\{y \mid y \leq 9, y \in \mathbb{R}\}$

c) 4; domain: $\{x \mid x \in \mathbb{R}\}$; range: $\{y \mid y \geq -12.25, y \in \mathbb{R}\}$

d) 4; domain: $\{x \mid x \in \mathbb{R}\}$; range: $\{y \mid x \in \mathbb{R}\}$

5. **a)** 0, 1, 2, or 3; y-intercept = 3 **b)** 0, 1, 2, 3, or 4; y-intercept = 5 **c)** 0, 1, 2, 3, or 4; y-intercept = 1

d) 0, 1, or 2; y-intercept = 0

6. **a)** degree of 4, even-degree polynomial; opens downward, extends down into quadrant III and down into quadrant IV; maximum of four x-intercepts; has a maximum value; y-intercept = 5

b) degree of 5, odd-degree polynomial; extends up into quadrant I and down into quadrant III; maximum of 5 x-intercepts; no maximum or minimum values; y-intercept = 12

7. **a)** extends up into quadrant II and down into quadrant IV

b) 3 **c)** 36

