PC Ma 12 Quadratic Functions

Review – key

BLM 3–5 Section 3.2 Extra Practice

**1. a)** Yes. The function fits the standard form of a quadratic function with *a* = 1, *b* = –15, and *c* = 0.

**b)** *y* = *x*2 – 16 Yes. The function fits the standard form of a quadratic function with *a* = 1, *b* = 0, and *c* = –16.

**c)** Yes. The function fits the standard form of a quadratic function with *a* = –4.9, *b* = 0, and *c* = 400.

**d)** No. The function does not fit the standard form of a quadratic function.

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| **2.** |  | **a)** | **b)** |
|  | **Vertex** | (–1, –4) | (–1, 9) |
|  | **Axis of symmetry** | *x* = –1 | *x* = –1 |
|  | ***x*-intercepts** | –3 and 1 | –4 and 2 |
|  | ***y*-intercept** | –3 | 8 |
|  | **Direction**  | upward | downward |
|  | **Max/min** | min *y* = –4 | max *y* = 9 |
|  | **Domain** | *x* ∈ R | *x* ∈ R |
|  | **Range** | *y* ≥ –4 | *y* ≤ 9 |

**3. a)** *y* = *x*2 + 14*x* + 39 **b)** *f* (*x*) = –6*x*2 – 3*x* + 30

**c)** *h*(*t*) = –9*t*2 – 18*t* + 41 **d)** *y* = 8*x*2 + 26*x* + 15

**4. a) b)**

**c) d)**

|  |  |  |  |  |
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|  | **a)** | **b)** | **c)** | **d)** |
| **Vertex** | (4, –1) | (–4, 9) | (2, –4) | (1, 5) |
| **Axis of symmetry** | *x* = 4 | *x* = –4 | *x* = 2 | *t* = 1 |
| ***x*-intercepts** | 3 and 5 | –1 and –7 | 0 and 4 | 0 and 2 |
| ***y*-intercept** | 15 | *–*7 | 0 | 0 |
| **Direction** | upward | downward | upward | downward |
| **Max/min** | min: –1 | max: 9 | min: –4 | max: 5 |
| **Domain** | *x* ∈ R | *x* ∈ R | *x* ∈ R | *t* ∈ R |
| **Range** | *y* ≥ –1 | *f* (*x*) ≤ 9 | *y* ≥ –4 | *h*(*t*) ≤ 5 |
|  |  |  |  |  |

**5. a)** *w* = width; 2 width + length = 200 m of fencing, so length = 200 – 2*w*

**b)** *A*(*w*) = *w*(200 – 2*w*) or *A*(*w*) = –2*w*2 + 200*w*

**c)**

**d)** 5000 m2 **e)** 50 m by 100 m

**6. a)**

**b)** 100 m; this represents the initial height of the projectile

**c)** 21.9 s; this represents the time that the projectile is in the air

**d)** 651.25 m; occurs at 10.5 s