

# Study Guide Answer Key

① vertex:  $(3, 6)$   
 AOS:  $x=3$   
 max/min: max  
 domain:  $\mathbb{R}$   
 range:  $y \leq 3$

vertex  $(0, 6)$   
 AOS:  $x=0$   
 max/min: min  
 domain:  $\mathbb{R}$   
 range:  $y \geq -6$

②  $f(x) = (x+1)^2 + 10$

$f(x) = (x-7)^2 + 2$

vertex  $(-1, 10)$   
 AOS:  $x=-1$   
 max/min: min  
 domain:  $\mathbb{R}$   
 range:  $y \geq 10$

vertex  $(7, 2)$   
 AOS:  $x=7$   
 max/min: min  
 domain:  $\mathbb{R}$   
 range:  $y \geq 2$

③  $f(x) = (x-6)^2 + 2$   
 shift right 6  
 shift up 2

$f(x) = (x+5)^2 - 4$   
 shift left 5  
 shift down 4

④  $y = (x+4)^2 - 10$   
 $y = 2x + 6$

$y = 3x^2 - 14x$   
 $y = x$

$(0, 6)$  and  $(-6, -6)$

$(0, 0)$  and  $(5, 5)$

⑤  $(0, 17)$   $(-1, 8)$   $(-5, -8)$

$y = ax^2 + bx + c$   
 $17 = 0 + 0 + c$   
 $17 = c$

$y = ax^2 + bx + c$   
 $8 = a(-1)^2 - 1b + c$   
 $8 = 1a - 1b + c$

$y = ax^2 + bx + c$   
 $-8 = a(-5)^2 - 5b + c$   
 $-8 = 25a - 5b + c$

$\{1, 10, 17\}$

$y = 1x^2 + 10x + 17$

⑤  $(0, 10)$   $(4, -6)$   $(8, 10)$

$y = ax^2 + bx + c$        $y = ax^2 + bx + c$        $y = ax^2 + bx + c$

$10 = c$        $-6 = 4^2a + 4b + c$        $10 = 8^2a + 8b + c$

$-6 = 16a + 4b + c$        $10 = 64a + 8b + c$

$+1, -8, 10$        $y = x^2 - 8x + 10$

⑥  $(x+3)(x+8)$        $(x-10)(x+2)$        $(2x+15)(x-7)$

$x^2 + 8x + 3x + 24$        $x^2 + 2x - 10x - 20$        $2x^2 - 14x + 15x - 35$

$x^2 + 11x + 24$        $x^2 - 8x - 20$        $2x^2 - 9x - 35$

⑦  $15x^2 - 10x$        $x^2 + 8x + 7$        $x^2 + 2x - 63$

$\begin{matrix} 5 & 3 \\ \hline 5 & 3 \end{matrix}$        $\begin{matrix} 7 & 1 \\ \hline 7 & 1 \end{matrix}$        $\begin{matrix} -9 & 7 \\ \hline -9 & 7 \end{matrix}$

$5x(3x-2)$        $(x+7)(x+1)$        $(x-7)(x+9)$

### BONUS

$2x^2 + 11x + 15$        $4x^2 + 7x + 3$

$2x^2 + 6x + 5x + 15$        $4x^2 + 4x + 3x + 3$

$2x(x+3) + 5(x+3)$        $4x(x+1) + 3(x+1)$

$(2x+5)(x+3)$        $(4x+3)(x+1)$