A2 HW: GRAPHING QUADRATIC FUNCTIONS IN STANDARD FORM

I. Find the vertex, axis of symmetry, y-intercept, and maximum or minimum value. Sketch the graph and state domain and range in interval notation for odds and set notation for evens.

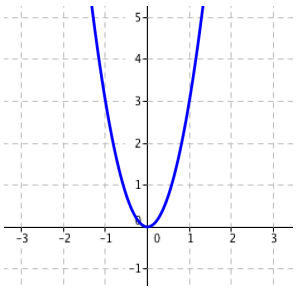
1. $f(x) = 3x^2$
2. $f(x) = x^2 + 2x + 1$
3. $f(x) = 3x^2 – 6x + 4$
4. $f(x) = -x^2 - 2x – 1$
5. $f(x) = x^2 – 10x + 9$
6. $f(x) = -6x^2 - 4x – 5$
7. $f(x) = x^2 – 9$
8. $f(x) = 3x^2 + 6$

II. Write the quadratic function in standard form.

9. $f(x) = (x – 3)(x + 2)$
10. $f(x) = 3(x – 2)^2 + 5$
11. $f(x) = -2(x + 4)^2 – 7$
12. $f(x) = 3(x – 6)(x + 2)$
13. $f(x) = 5(x + 6)^2 – 1$
14. $f(x) = (x – 1)^2$

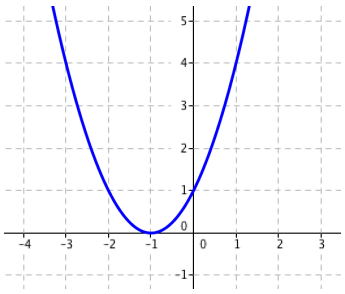
ANSWERS

1.



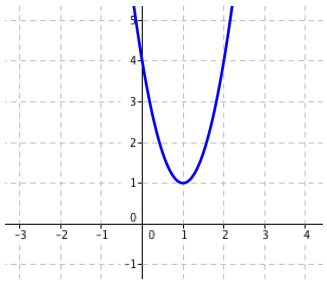
vertex: (0,0), AOS: x = 0
y-int: (0,0), Min = 0
D: $\left(-\infty,\infty\right)$, R: $\left[0,\infty\right)$

2.



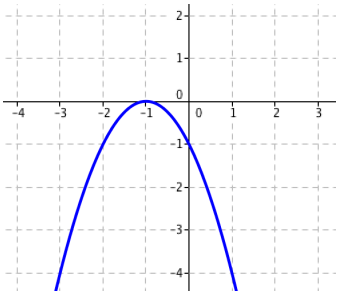
vertex: (-1,0), AOS: x = -1
y-int: (0,1), Min = 0
D: $\left\{x \middle| x \in R\right\}$, R: $\left\{y \middle| y \geq 0\right\}$

3.



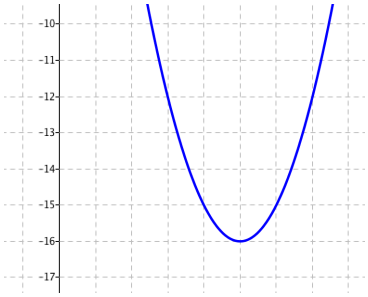
vertex: (1,1), AOS: x = 1
y-int: (0,4), Min = 1
D: $\left(-\infty,\infty\right)$, R: $\left[1,\infty\right)$

4.



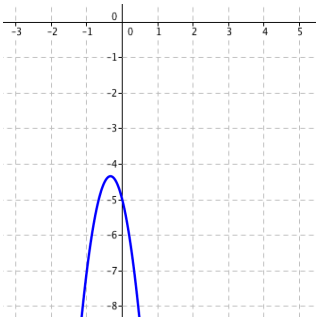
vertex: (-1,0), AOS: x = -1
y-int: (0,-1), Max = 0
D: $\left\{x \middle| x \in R\right\}$, R: $\left\{y \middle| y \leq 0\right\}$

5.



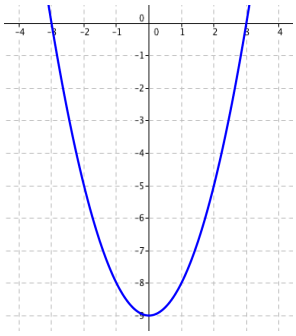
vertex: (5,-16), AOS: x = 5
y-int: (0,9), Min = -16
D: $\left(-\infty,\infty\right)$, R: $\left[-16,\infty\right)$

6.



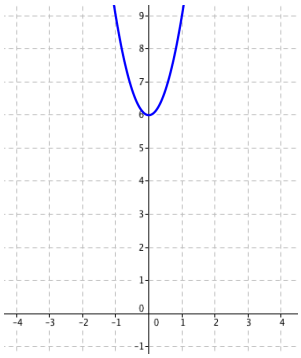
vertex: $\left(-\frac{1}{3},-\frac{55}{9}\right)$, AOS: $x=-\frac{1}{3}$
y-int: (0,-5), Max = -55/9
D: $\left\{x \middle| x \in R\right\}$, R: $\left\{y \middle| y \leq -\frac{55}{9}\right\}$

7.



vertex: (0,-7), AOS: x = 0
y-int: (0,-7), Min = -7
D: $\left(-\infty,\infty\right)$, R: $\left[-7,\infty\right)$

8.



vertex: (0,6), AOS: x = 0
y-int: (0,6), Min = 6
D: $\left\{x \middle| x \in R\right\}$, R: $\left\{y \middle| y \geq 6\right\}$

9. $f\left(x\right)=x^2-x-6$

10. $f\left(x\right)=3x^2-12x+17$

11. $f\left(x\right)=-2x^2-16x-39$

12. $f\left(x\right)=3x^2-12x-36$

13. $f\left(x\right)=5x^2+60x-179$

14. $f\left(x\right)=x^2-2x+1$