

# COLLEGE ALGEBRA

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GPS # 12

## 2.1 QUADRATIC FUNCTIONS; PARABOLAS II

Class Time: 11:30-12:45 Date: 1-31-09

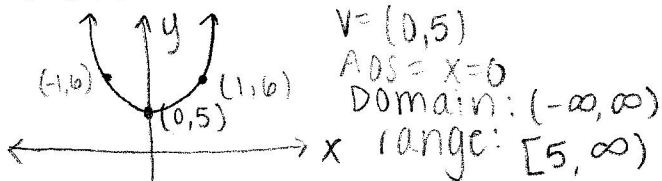
### Useful Guidelines:

- \*  $f(x) = x^2 + k$ : A parabola with the same shape as the graph of  $f(x) = x^2$ . The parabola is shifted vertically  $k$  units up if  $k > 0$  or  $k$  units down if  $k < 0$ ; Vertex:  $(0, k)$ .
- \*  $f(x) = (x - h)^2$ : A parabola with the same shape as the graph of  $f(x) = x^2$ . The parabola is shifted horizontally  $h$  units to the right if  $h > 0$  or  $h$  units to the left if  $h < 0$ ; Vertex:  $(h, 0)$ .
- \*  $f(x) = a(x - h)^2 + k$ : The parabola is open upward if  $a > 0$  or open downward if  $a < 0$ .  
The axis of symmetry is  $x = h$ ; Vertex:  $(h, k)$ .

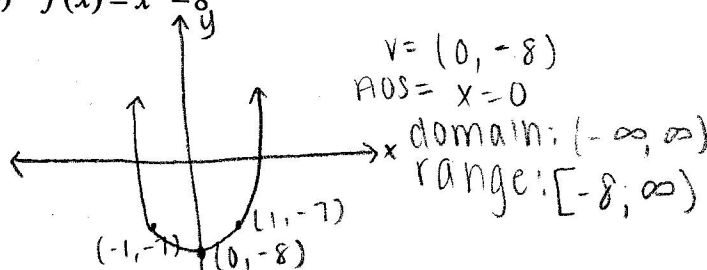
*20. Good  
20. NB!*

Graph each parabola. Plot at least two points in addition to the vertex. Give the vertex, axis, domain, and range.

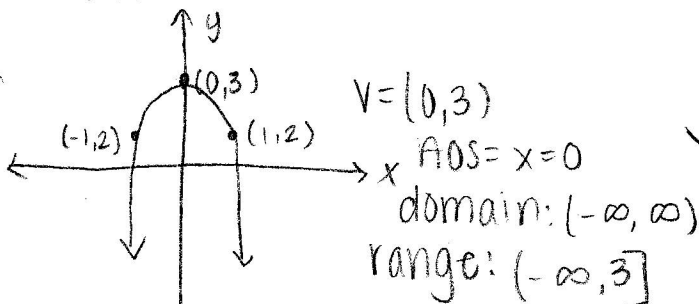
1. a)  $f(x) = x^2 + 5$



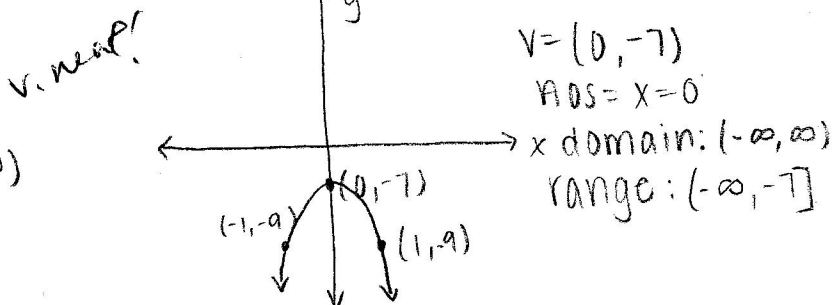
b)  $f(x) = x^2 - 8$



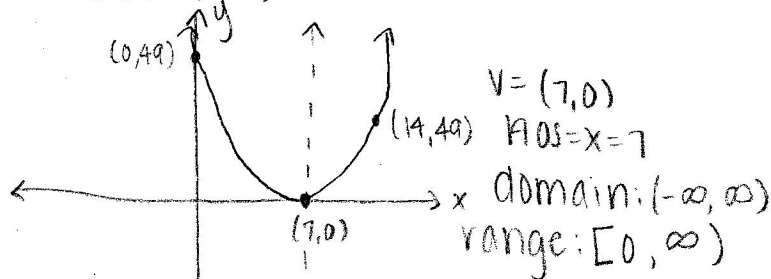
2. a)  $f(x) = -x^2 + 3$



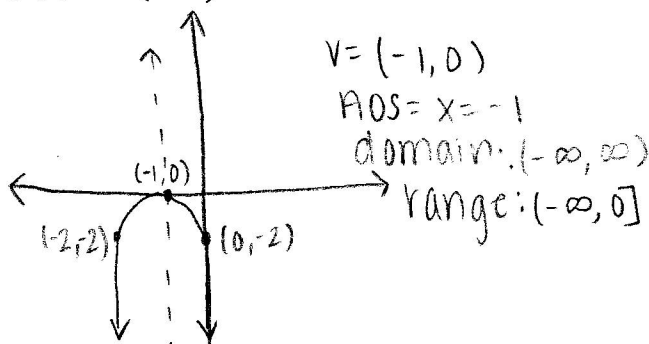
b)  $f(x) = -2x^2 - 7$



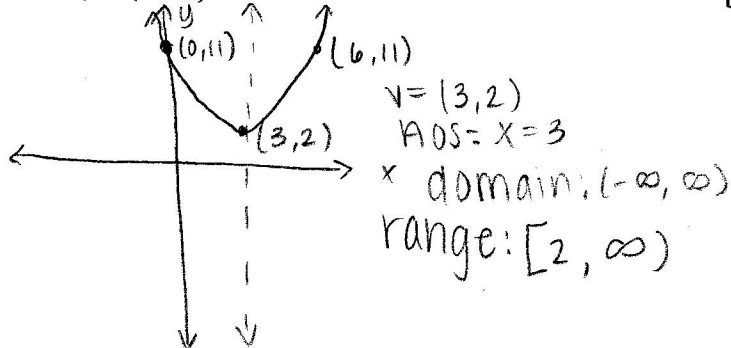
3. a)  $f(x) = (x - 7)^2$



b)  $f(x) = -2(x + 1)^2$



4. a)  $f(x) = (x - 3)^2 + 2$



b)  $f(x) = 3(x - 1)^2 - 1$

