

Practice Test: Vertex and Standard Forms

Show your work. Unless stated otherwise, each part of a question is 3 points, scored as follows:

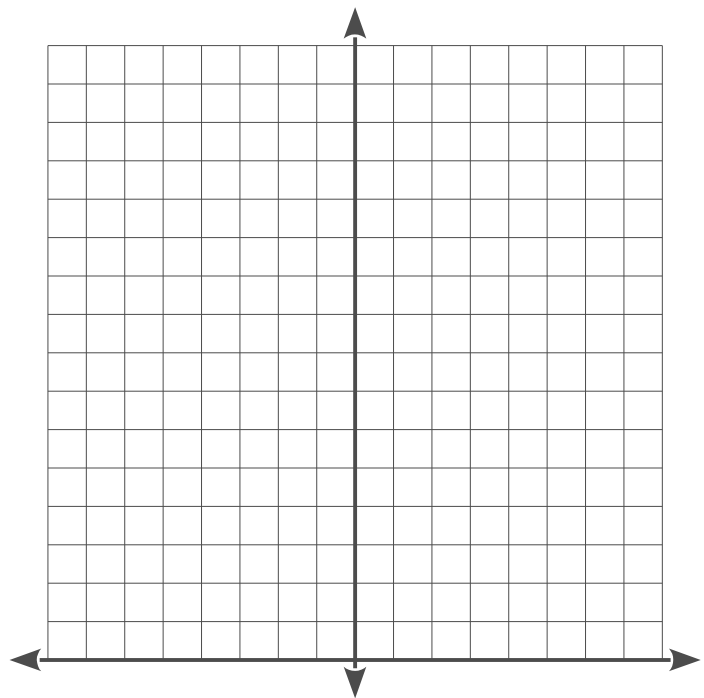
- 3 pts: Completely correct.
- 2 pts: One minor error.
- 1 pt: Multiple minor errors or one major.
- 0 pt: Blank or completely off-track.

$$y = ax^2 + bx + c \quad y = a(x-h)^2 + k \quad a = \frac{\text{actual height}}{\text{normal height}} \quad h = -\frac{b}{2a} \quad k = c - ah^2$$

Graph the parent quadratic function

- 1) The parent function for the quadratics is $f(x) = x^2$. All other quadratics are transformations of this function. Fill in the y values for this function and graph them. (6 pts)

x	y
-4	
-3	
-2	
-1	
0	
1	
2	
3	
4	



Work with quadratic function rules

- 2) Write a rule for a quadratic that goes through its vertex at $(0,0)$ and another point at $(4, 24)$.
- 3) Write a rule for a quadratic that goes through its vertex at $(5, 8)$ and another point at $(3, -4)$.

4) Convert $f(x) = -3(x-2)^2 + 10$ to standard form.

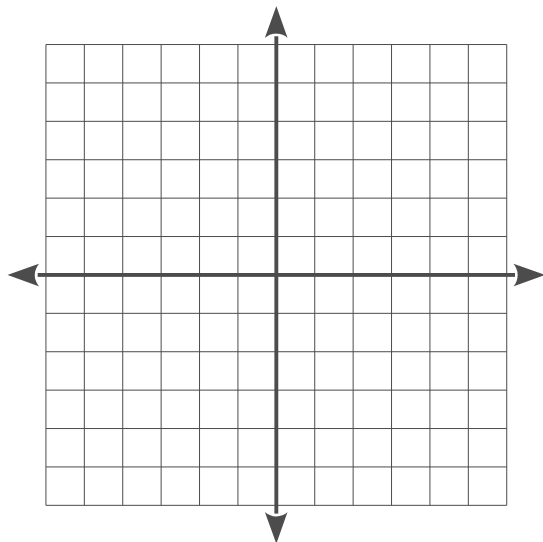
5) Convert $f(x) = (x+5)^2 - 7$ to standard form.

6) Convert $f(x) = 3x^2 + 12x + 7$ to vertex form.

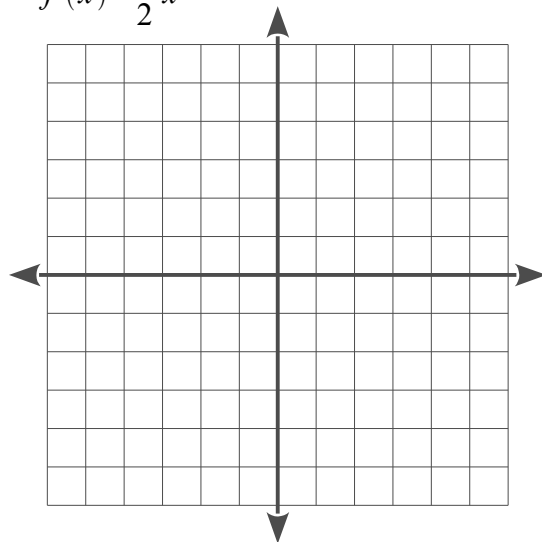
7) Convert $f(x) = -x^2 + 6x - 17$ to vertex form.

Sketch graphs of quadratic functions (mark at least three points)

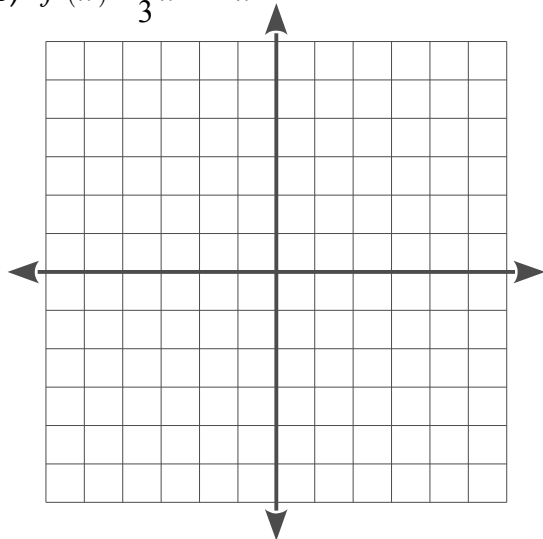
8) Vertex $(-2, -4)$; also goes through $(1, 2)$



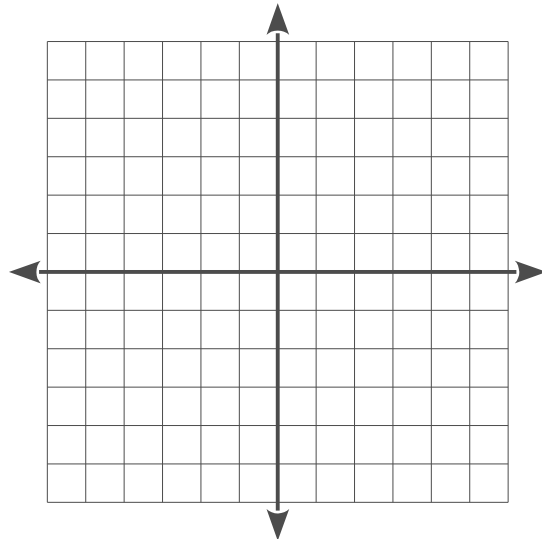
9) $f(x) = \frac{1}{2}x^2$



10) $f(x) = \frac{1}{3}x^2 - 2x - 1$

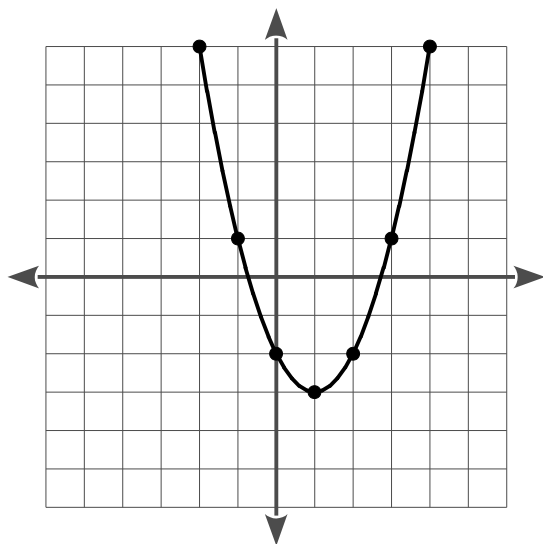


11) $f(x) = 2(x-3)^2 - 4$

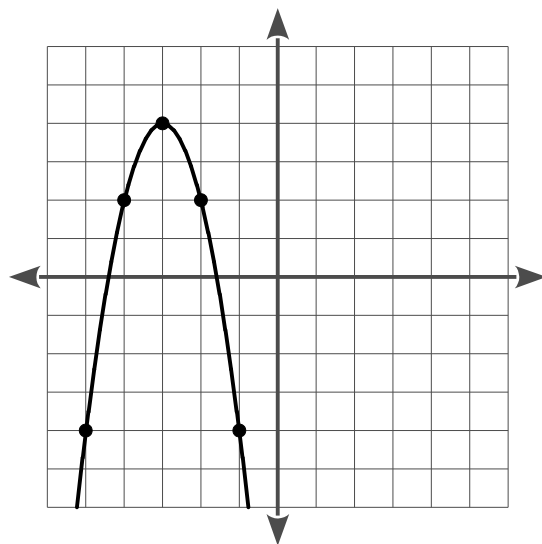


Write the function rule based on a graph

12) $f(x) = ?$



13) $f(x) = ?$



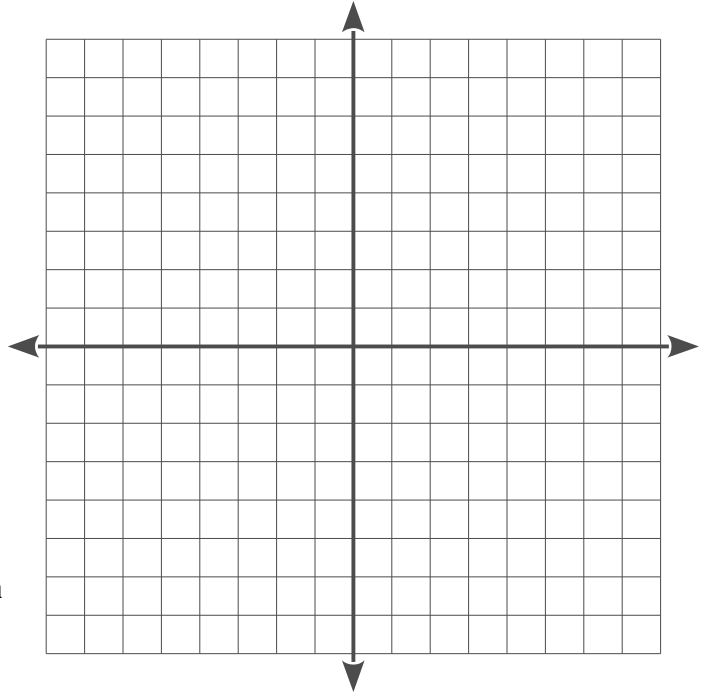
Honors questions:

14) Suppose $f(x)$ is a quadratic function. Its vertex is $(1, -5)$, and it also goes through $(-4, 5)$.

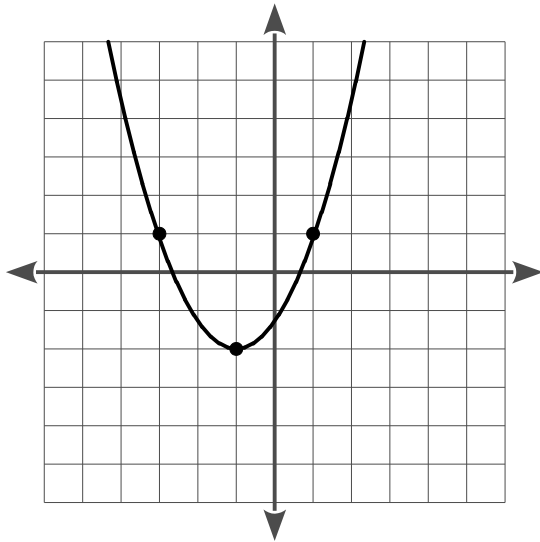
A) Sketch a graph of the parabola for $f(x)$.

B) Find the rule ("equation") for $f(x)$. You may use *either* vertex form *or* standard form.

C) Convert your rule for $f(x)$ from the form you chose to the other form.



15) $f(x) = ?$



16) $f(x) = \frac{1}{3}x^2 + 2x + 6$

