Honors Algebra 2/Trig   Name_____
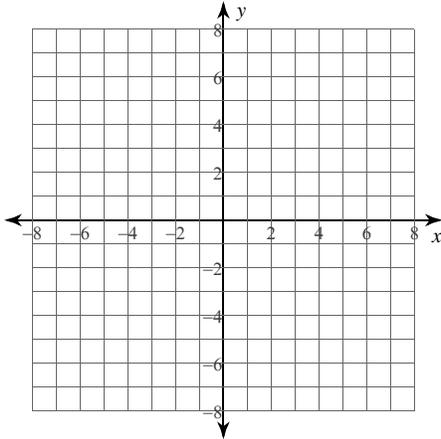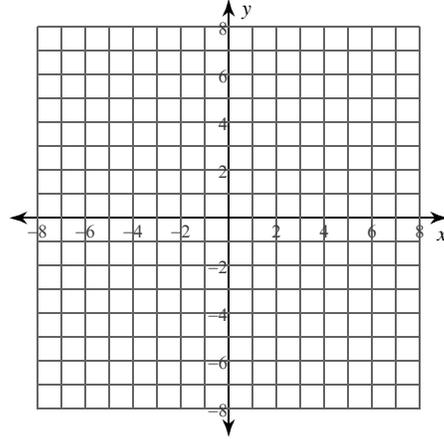TEST 3.1-3.4 Review #1 (Sections 3.1-3.2)

1) and 2): State the vertex, axis of symmetry, min/max value, *y*-intercept, and *x*-intercepts of each function. Then sketch the graph and identify each part on the graph.

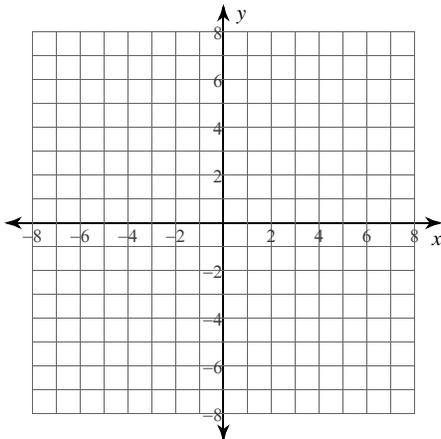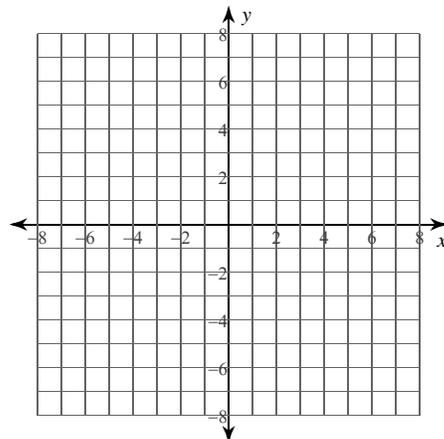1) $f(x) = \dfrac{1}{2}(x-3)^2 + 4$

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

3) and 4): Convert into VERTEX form, then identify its vertex, axis of symmetry, min/max, *y*-intercept, and zeros. Sketch the graph, including *x*-intercepts if they exist.
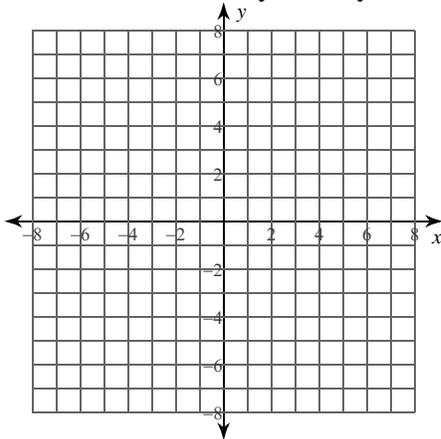
3) $f(x) = -2x^2 + 8x - 9$

4) $f(x) = \dfrac{3}{4}x^2 + 3x + \dfrac{9}{4}$

3) through 6): A certain parabola opens down and has a vertex at $(-2, 5)$.

5) Sketch the graph with what you know.
    What is its axis of symmetry?

6) Are its *x*-intercepts real or imaginary?
    How can you tell?

7) Does the parabola have a minimum or
    maximum and what is its ordered pair?

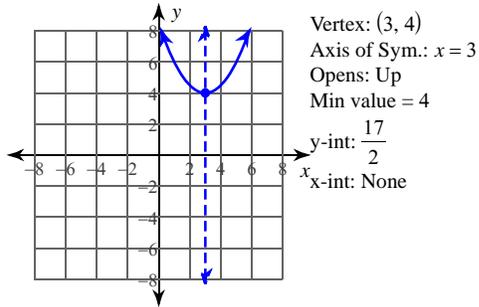8) What is the domain and range of the
    parabola?

11) and 12): Solve each problem involving quadratic functions.

9) The altitude of a particular model rocket as a function of time is given by $h(t) = -16t^2 + 64t + 512$
    where *h* is in feet and *t* is in seconds. Determine the maximum height of the rocket and the time
    after launch at which it occurs, then sketch the graph of $h(t)$. Launch is $t = 0$.

10) You are building a rectangular pen that has four equal-size internal rectangular spaces (think big
    rectangle with three equally-spaced vertical lines inside). You have 1000 yards of total fencing
    material. What are the dimensions of the outer rectangle that will maximize its area?

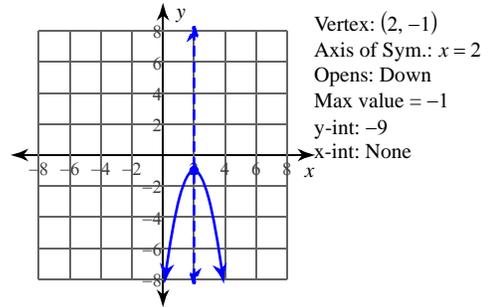# Answers to TEST 3.1-3.4 Review #1 (Sections 3.1-3.2)

1)

Vertex: $(3, 4)$
Axis of Sym.: $x = 3$
Opens: Up
Min value $= 4$
y-int: $\dfrac{17}{2}$
x-int: None

3)

Vertex: $(2, -1)$
Axis of Sym.: $x = 2$
Opens: Down
Max value $= -1$
y-int: -9
x-int: None

5) Axis of symmetry is $x = 1$

7) See solutions

9) 576 ft, 2 seconds after launch