Section 4.3: Quadratic functions and their properties

#1-12: For each problem do the following

a) Find the indicated function and describe the transformation as compared to the function $f(x) = x^2$, specifically state if the graph is shifted left, right, up, down and if any reflection has occurred

b) make a table of values and sketch a graph.

c) state the domain and range of the function

d) state the intervals where the function in increasing and decreasing

e) state if the function has a local maximum point, if it does state the local maximum value

f) state if the function has a local minimum point, if it does state the local minimum value

1) f(x - 3) + 4   2) f(x - 2) + 6   3) 2f(x+3) - 4

4) 3f(x+1) + 2   5) $\frac{1}{2}f(x+4) - 6$ 6) $\frac{1}{3}f(x+3) - 1$

7) -2f(x) + 3   8) -3f(x) + 6   9) $-\frac{1}{4}f(x+5) - 2$

10) $-\frac{1}{2}$f(x + 2) - 1   11) 2f(x+3)+4   12) 2f(x+1)+5

#13 – 24: For each problem do the following:

a) Use completing the square to rewrite the problem in standard form

b) Describe the transformation as compared to the function $f(x) = x^2$

c) Sketch a graph, make sure to label the vertex. You may use your calculator, instead of making a table of values to create your graph

13) $f(x) = x^2 + 6x + 5$ 14) $g(x) = x^2 + 10x - 11$ 15) $k(x) = x^2 - 4x + 2$

16) $m(x) = x^2 - 2x + 6$ 17) $f(x) = 2x^2 + 8x - 3$ 18) $h(x) = 4x^2 + 24x + 30$

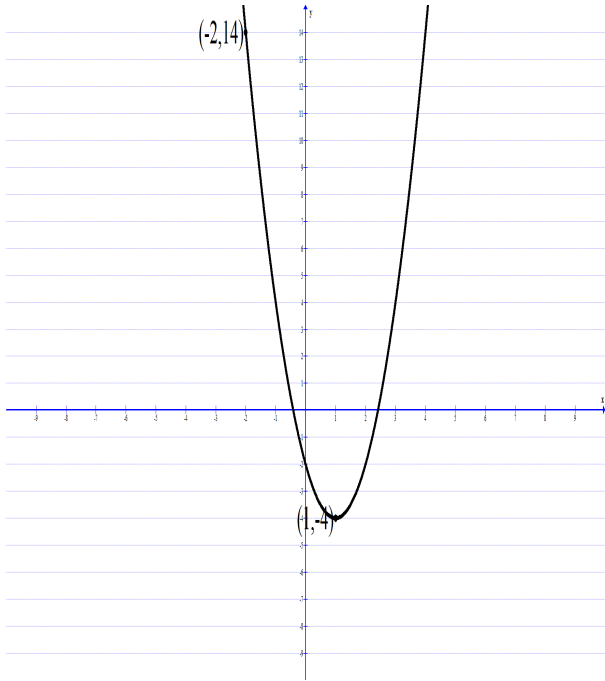19) $f(x) = -x^2 + 6x + 4$ 20) $g(x) = -x^2 - 8x - 2$ 21) $k(x) = -2x^2 + 12x - 7$

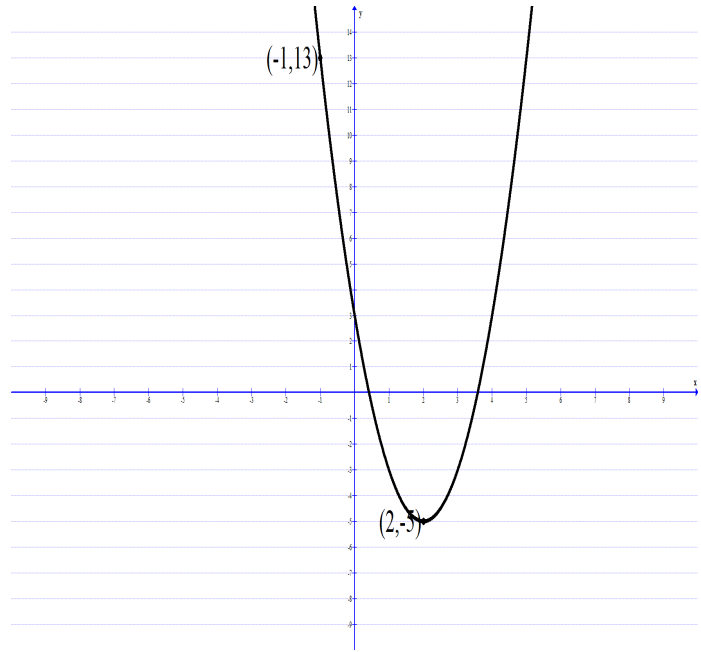22) $g(x) = -2x^2 + 8x + 3$ 23) $f(x) = -3x^2 - 12x + 1$ 24) $n(x) = -2x^2 + 20x - 45$

.
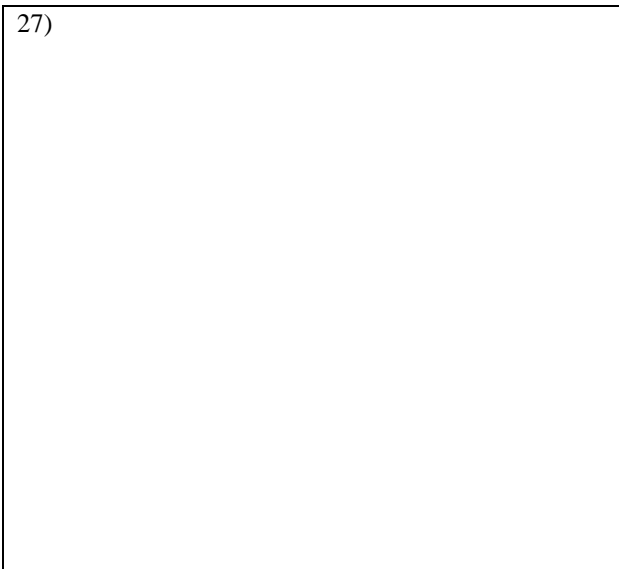
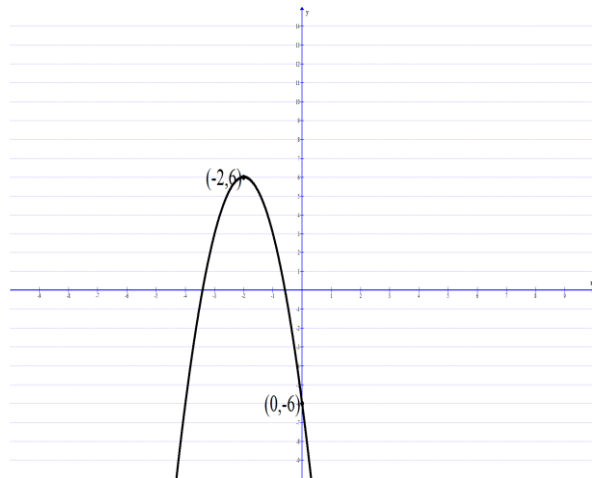#25 – 32, determine the equation of the quadratic function
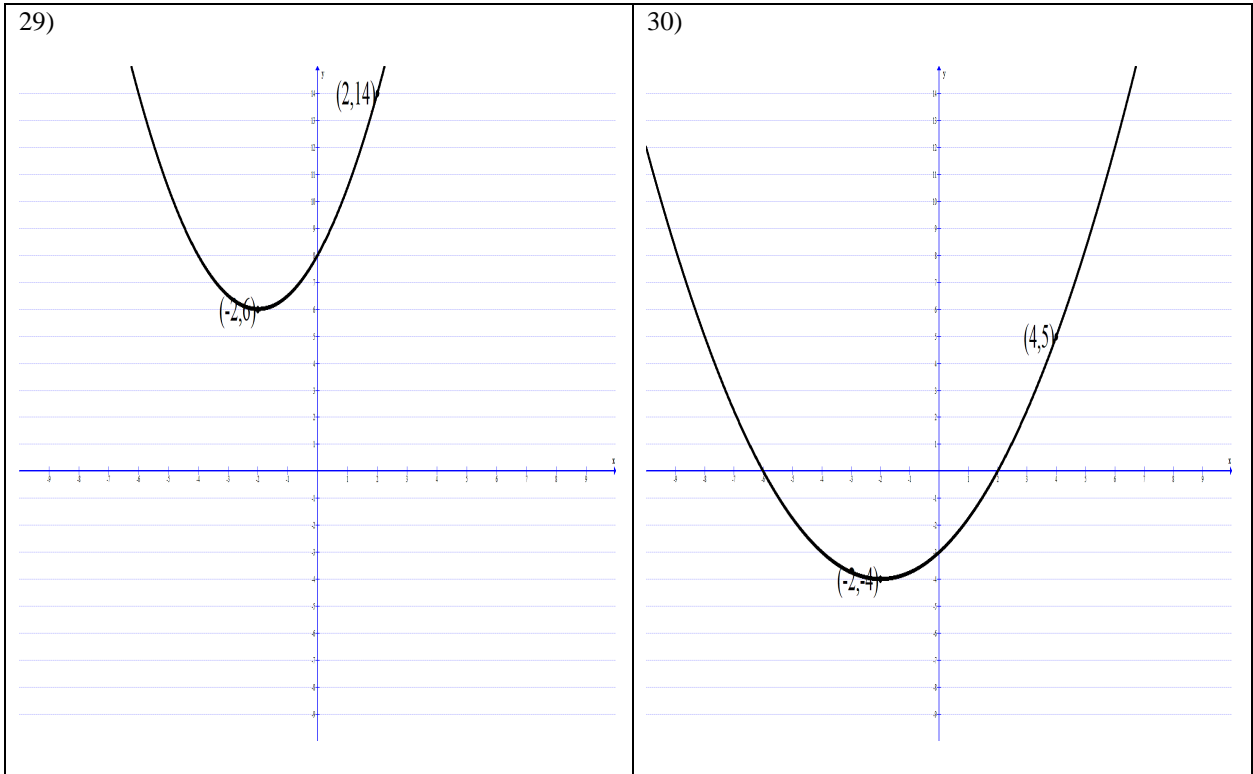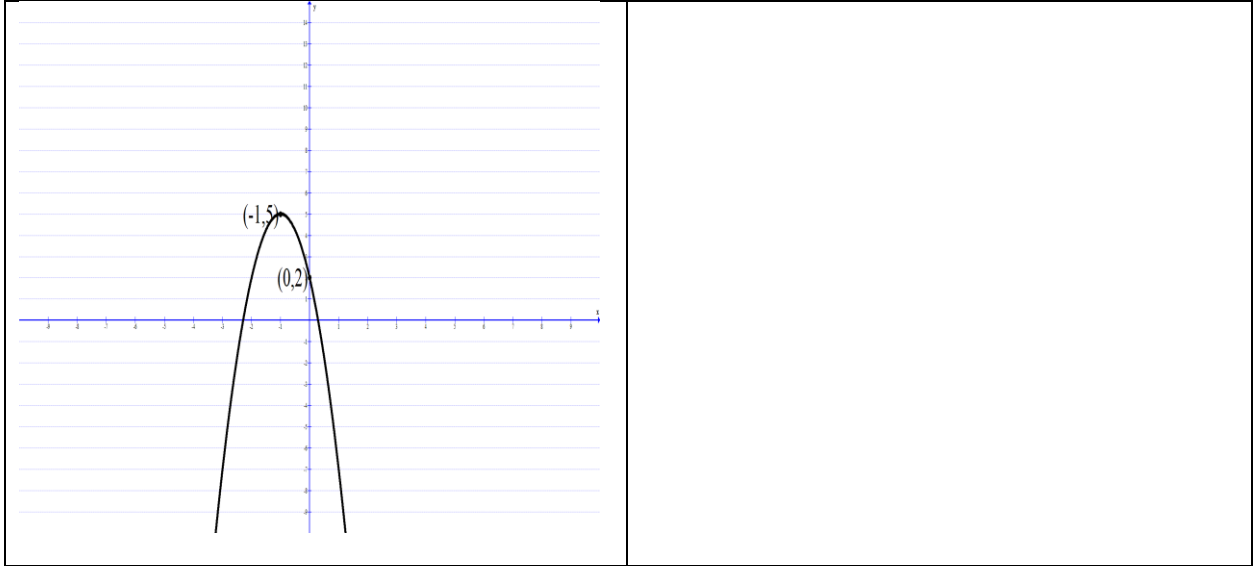
25)

(-2,14)
(1,-4)

26)

(-1,13)
(2,-5)

27)

28)

(-2,6)
(0,-6)

(-1,5)

(0,2)

29)

(2,14)

(-2,6)

30)

(4,5)

(-2,-4)

31)

(-2,3)

(2,-1)

32)

(-2,3)

(8,-7)