Answers to Algebra 2 L2.1b Writing Transformations of Quadratics Pg 52, #27-44

27. The graph of f is a vertical stretch by a factor of 3 followed by a translation 2 units left and 1 unit up of the graph of the parent quadratic function; $(-2, 1)$

28. The graph of f is a vertical stretch by a factor of 4 followed by a reflection in the x-axis and a translation 1 unit left and 5 units down of the graph of the parent quadratic function; $(-1, -5)$

29. The graph of f is a vertical stretch by a factor of 2 followed by a reflection in the x-axis and a translation 5 units up of the graph of the parent quadratic function; $(0, 5)$

30. The graph of f is a vertical shrink by a factor of $\frac{1}{2}$ followed by a translation 1 unit right of the graph of the parent quadratic function; $(1, 0)$

31. $g(x) = -4x^2 + 2$; $(0, 2)$

32. $g(x) = \frac{1}{3}(x - 3)^2$; $(3, 0)$

33. $g(x) = 8\left(\frac{1}{2}x\right)^2 - 4$; $(0, -4)$

34. $g(x) = -(2x + 6)^2 - 2$; $(-3, -2)$

35. C; The graph is a vertical stretch by a factor of 2 followed by a translation 1 unit right and 2 units down of the parent quadratic function.

36. B; The graph is a vertical shrink by a factor of $\frac{1}{2}$ followed by a translation 1 unit left and 2 units down of the parent quadratic function.

37. D; The graph is a vertical stretch by a factor of 2 and a reflection in the x-axis, followed by a translation 1 unit right and 2 units up of the parent quadratic function.

38. E; The graph is vertical stretch by a factor of 2 followed by a translation 1 unit left and 2 units up of the parent quadratic function.

39. F; The graph is a vertical stretch by a factor of 2 and a reflection in the x-axis followed by a translation 1 unit left and 2 units down of the parent quadratic function.

40. A; The graph is a vertical stretch by a factor of 2 followed by a translation 1 unit right and 2 units up of the parent quadratic function.

41. Subtract 6 from the output; Substitute $2x^2 + 6x$ for $f(x)$; Multiply the output by -1; Substitute $2x^2 + 6x - 6$ for $h(x)$; Simplify.

42. Multiply the input by -1; Replace x with $-x$ in $f(x)$; Simplify; Subtract 4 from the input; Replace x with $x - 4$ in $f(x)$; Simplify.

43. $h(x) = -0.03(x - 14)^2 + 10.99$

44. The graph of g is a horizontal stretch by a factor of $\sqrt{6}$ of the graph of f; about 1.67 ft