1. g(x) = 3f(x + 1) - 2

The graph of f is vertically dilated by a scale factor of 3, then the result is horizontally translated by -1 unit, followed by a vertical translation by -2 units to get the graph of g(x).

1. greatest value of k = -1
2. k = -3, x < -3

y = 3(x + 1)2 -2

1. g(-3) = 10, range of g is g > 10, hence domain of g-1 is x > 10.