

$$\boxed{49} \text{ (a) } g(4) = \frac{f(8)}{f(4)} = \frac{18,817}{9597} = 1.96, \quad g(8) = \frac{f(12)}{f(8)} = \frac{33,835}{18,817} = 1.80, \quad g(12) = \frac{f(16)}{f(12)} = \frac{47,191}{33,835} = 1.39;$$

See *Figure 49*.

x	4	8	12
$g(x)$	1.96	1.80	1.39

Figure 49

(b) The function g represents the factor by which the new cases are increasing. The numbers 1.96, 1.80, and 1.39 are decreasing. As soon as this ratio is less than one, the number of new cases will begin to decrease. Since $g(x)$ is decreasing, its value may be less than 1 in one or two four-week periods. This logic lead Farr to make his prediction.