Review:

1. a. 4 mph  
   b. 8 mph

2. \(a = 3, \ b = 10\)

3. \(h(x) = \frac{9x}{5x+4}\)
   a. See graph at right.
   \[D = \{x : x \neq -\frac{4}{5}\}\]
   b. \(y = \frac{9}{5}\)

4. 28.625 sq. un.

5. a. It increased at a rate of \(~200\) students per year for 20 years. Then there was no significant increase for \(~10\) years. Then there was a slight decrease in enrollment. About 40 years ago the population increased again at a rate of \(~160\) students per year and has continued to increase at this rate.
   b. Yes, \(~60\) years ago.

6. \(V = 36\pi\)

7. See bold answers in table at right.
   \[
   \begin{array}{ccc}
   x & f(x) & g(x) \\
   -3 & -7 & 5 \\
   -2 & -2 & 3 \\
   -1 & 5 & 1 \\
   0 & 3 & 0 \\
   1 & 5 & -1 \\
   2 & -2 & -3 \\
   3 & -7 & -5 \\
   \end{array}
   \]

8. See graph at right below.

   \(A = 11.53\) sq. un.

9. Possible scenario: I am at a friends house for a while. I then travel quickly home. I remain home for a bit and then make a trip to the grocery store a few blocks away. I then head back to my friends house.
10. a. \(-\frac{\sqrt{5}}{2}\)  
    b. \(\frac{-\sqrt{5}}{2}\)  
    c. \(-\frac{\pi}{4}\)  
    d. \(\frac{\sqrt{3}}{3}\)  
    e. \(\frac{\pi}{3}\)  
    f. \(\sqrt{2}\)  

11. a.  
    ![Graph of a function]

12. a. \(15^{-1/2}\)  
    b. \(8^{3/2}\)  
    c. \(\sqrt[3]{12^3}\)  
    d. \(m^{2/3}\)  
    e. \(\frac{1}{\sqrt{64}} = \frac{1}{2}\)  
    f. \(4^{3/2} = 8 = \sqrt{64}\)  

13. a. \(x^2 - 6x + 9\)  
    b. \(x^4 + x^3 + 4x^2 + 4x + 4 - \frac{2}{x-1}\)  

14. \(x^2(x+1)^2 = x^4 + 2x^3 + x^2\)  

15. a. 210 miles  
    b. 12,982 miles  

16. a. \(y = -\frac{6}{25}(x+2)^2 + 5\)  
    b. \(y + 1 = -\frac{6}{5}(x-3)\) or \(y - 5 = -\frac{6}{5}(x+2)\)  

17. \(b(x) = 3x^2\)  

18. \(y = \begin{cases} 
2x & \text{for } x \geq \frac{1}{2} \\
-2x + 2 & \text{for } x < \frac{1}{2} 
\end{cases}\)  
\(m = 2\) if \(x > \frac{1}{2}\), \(m = -2\) if \(x \leq \frac{1}{2}\)  

19. a. \(\{x : x > -2\}\) or \((-\infty, \infty)\)  
    b. All reals  
    c. \(\{x : x \neq -2, -1\}\) or \((-\infty, -2) \cup (-2, -1) \cup (-1, \infty)\)  
    d. \(\{x : x \neq -4 \text{ and } x \geq -5\}\) or \((-5, -4) \cup (-4, \infty)\)  

20. a. \(x = \frac{\pi}{3}, \frac{5\pi}{3}\)  
    b. \(x = 0, \pi, 2\pi\)  
    c. \(x = \frac{\pi}{2}, \frac{3\pi}{2}\)