1. As you travel at a constant speed from Tucson to Bisbee, you pass through Benson. Sketch possible graphs to represent the functions below. **Label the axes and important features of your graphs.**

(a) Distance from Tucson as a function of time: ____________

(b) Distance from Bisbee as a function of time: ____________

(c) Distance from Benson as a function of time: ____________

(d) Speed as a function of distance: ____________

2. Use the graph at the right to answer the following **domain is [-3,11].**

(a) What is the value of \( f(0) \)? ____________

(b) What is the range of \( f(x) \)? ____________

(c) What is(are) the zeros of \( f(x) \)? ____________

(d) On what interval(s) is \( f(x) \) increasing? ____________

(e) Find the value(s) of \( x \) so that \( f(x) = 2 \)? ____________

3. The relationship between the tuition, \( T \), and the number of credits, \( c \), at a particular college is given by

\[
T(c) = \begin{cases} 
100 + 220c & 0 \leq c \leq 6 \\
800 + 220(c - 6) & 6 < c \leq 18 
\end{cases}
\]

(a) What is the tuition for 7 credits?

(b) If the tuition was \$3000, how many credits were taken?

(c) In a complete sentence, give a practical interpretation of the vertical intercept.

(d) In a complete sentence, give a practical interpretation of the slope.

4. Solve \( g(y) = 5 \) for \( g(y) = \sqrt{y^2 - 16} \). **Show all work; give exact answer.**
5. Let \( H(\alpha) = H_0(1 - \alpha \cdot \Delta t) \). The constants are positive.
   (a) What is the independent variable? ________________
   (b) What is the dependent variable? ________________
   (c) What are the constants? ________________
   (d) Re-write the given equation so that it is in the form \( y = mx + b \). ________________
   (e) Graph this function neatly and accurately. Label the axes and the intercepts clearly.

![Graph of a function with grid]

6. (a) Find the domain of \( f(t) = \frac{t+6}{t^2+3t-18} \). SHOW ALL WORK.

   (b) Create a function that has a domain of \((4, \infty)\).

7. Gasoline is being pumped into a tank at a constant rate (cubic feet per minute). A graph of the height of the gasoline in the tank as a function of time is shown. You can assume that the tank was initially empty and that the tank will be filled. Draw a possible shape of the tank. Label your graph.

![Graph showing height as a function of time]