1. Using the given values of the function along with the fact that \( f \) is exponential, we can quickly make a table of values with \( \Delta x = 2 \) by multiplying each previous entry by 4.

\[
\begin{array}{c|c}
  x & f(x) \\
  \hline
  0 & 2 \\
  2 & 8 \\
  4 & 32 \\
\end{array}
\]

Therefore \( f(4) = 32 \).

2. Using the given values of the function along with the fact that \( g \) is linear, we can quickly make a table of values with \( \Delta x = 3 \) by adding 4 to each previous entry.

\[
\begin{array}{c|c}
  x & g(x) \\
  \hline
  0 & 2 \\
  3 & 6 \\
  6 & 10 \\
\end{array}
\]

Therefore \( g(6) = 10 \).

3. \( P(t) = 2000e^{-0.04t} \)

4. \( P(t) = 4t + 100 \)

5. Let \( A \) be the number of milligrams of this drug \( t \) hours after being shipped.

\[
A = 600e^{kt} \\
300 = 600e^{k\cdot10} \\
0.5 = e^{10k} \\
\ln (0.5) = 10k \\
k = \frac{\ln (0.5)}{10} \approx -0.0693 \\
A \approx 600e^{-0.0693t} \\
\text{At } t = 48, A \approx 21.5 \text{ mg}
\]

6. For the graph on the left, \( f \) is increasing at \( x = 2 \), so \( f'(2) \) is positive. For the graph on the right, \( f \) is decreasing at \( x = 2 \), so \( f'(2) \) is negative.
7. (a) \( C(q) = 6000 + 3q \) and \( R(q) = 8q \).
(b) 
\[
\text{Profit} = R(600) - C(600) \\
\text{Profit} = 4800 - 7800 \\
\text{Profit} = -3000
\]
This amounts to a loss of $3000
(c) 
\[
\text{Revenue} = \text{Cost} \\
8q = 6000 + 3q \\
5q = 6000 \\
q = 1200 \text{ frisbees}
\]

8. (a) 
\[
\frac{A(10) - A(0)}{10 - 0} = \frac{1250.0 - 800}{10} = 45
\]
$45,000,000 per year
(b) 
\[
A'(20) \approx \frac{A(20.1) - A(20.0)}{20.1 - 20.0} = \frac{1786.6 - 1780}{0.1} = 66
\]
$66,000,000 per year

9. (a) 
\[
A(t) = 3000(1.025)^t
\]
(b) 
\[
5000 = 3000(1.025)^t \\
\frac{5}{3} = (1.025)^t \\
\ln \left(\frac{5}{3}\right) = t \ln (1.025) \\
t = \frac{\ln \left(\frac{5}{3}\right)}{\ln (1.025)} \\
t \approx 20.7 \text{ years}
\]

10. 
\[
\ln \left(x^7\right) - 4000 = 2000 - \ln \left(x^3\right) \\
\ln \left(x^7\right) + \ln \left(x^3\right) = 2000 + 4000 \\
7 \ln (x) + 3 \ln (x) = 6000 \\
10 \ln (x) = 6000 \\
\ln (x) = 600 \\
x = e^{600}
\]