ANSWERS to Mid-Unit 5 Corrective Assignment

1. $\frac{4}{3}$

2. B. Three

3. Increasing: $(-2, 0)$ and $(3, \infty)$ because $f'(x) > 0$.
   Decreasing: $(\infty, -2)$ and $(0, 3)$ because $f'(x) < 0$.

4. Max at $x = -2.5$
   Min at $x = 1$

5. $f(e^{-1}) = -\frac{1}{e}$
   Min value is $-\frac{1}{e}$.

6. $g(-2) = -14$
   $g(-1) = -7.5$
   $g\left(\frac{1}{2}\right) = -10.875$
   $g(2) = 6$

   Absolute maximum value of 6.

7. Rel max at $x = \frac{3\pi}{4}$ because $f'\left(\frac{3\pi}{4}\right) = 0$ and $f''\left(\frac{3\pi}{4}\right) < 0$.

   Rel min at $x = \frac{5\pi}{4}$ because $f'\left(\frac{5\pi}{4}\right) = 0$ and $f''\left(\frac{5\pi}{4}\right) > 0$.

8. $b(3) = 0.93$. $b(t)$ is the rate of change, therefore the population is increasing because $b(3) > 0$.

9. $0.6266 < x < 1.085$ and $1.401 < x < 1.5$

10. $x = 1.1978$