

Assignment 9.

1. (a) Omit
(b) Let $f(x) = \frac{x}{3} + 2 - e^{-x}$, then $f(-1) = -1.05 < 0$, and $f(0) = 1 > 0$, so there is $x \in (-1, 0)$ such that $f(x) = 0$, it follows that $\frac{x}{3} + 2 = e^{-x}$ has a root lies between -1 and 0 .
(c) Suppose $x_n \rightarrow \alpha$, then $x_{n+1} \rightarrow \alpha$, hence $\alpha = \ln 3 - \ln(\alpha + 6)$, then $e^\alpha = \frac{3}{\alpha+6}$, it follows $e^{-\alpha} = \frac{\alpha+6}{3}$, which implies that $\frac{\alpha}{3} + 2 = e^\alpha$.
(d) -0.59 .
2. (a) Omit
(b) Omit
(c) 5.64
3. (a) $1 + x^3 - \frac{1}{2}x^6$
(b) 1.00
(c) Omit
(d) $-0.5 < x < 0$, $\frac{d^2y}{dx^2} < 0$, for $0 < x < 0.5$, $\frac{d^2y}{dx^2} > 0$
4. (a) Omit
(b) $\frac{26}{3}$
(c) 8.61
(d) greater.