Name - Biken Maharjan HW3

② (a) Standard deviation = ?

$E = 0.4 = (z * \sigma)/\sqrt{n}$

When $n = 40$, $z = 2.0537$

$\sigma = 1.8318$ □

(b) A 99th percentile confidence interval for this system:

$z = 2.5758$

Confidence interval $= \left(\text{mean} - \frac{(z * \sigma)}{\sqrt{n}}, \text{mean} + \frac{(z * \sigma)}{\sqrt{n}}\right)$

$= \left(3 - \frac{(2.0537 * 1.2318)}{\sqrt{40}}, 3 + \frac{(2.0537 * 1.2318)}{\sqrt{40}}\right)$

$\Rightarrow (3 - 0.4, 3 + 0.4) \Rightarrow (2.06, 3.4)$ □

(c) $0.1 = \frac{(2.0537 * 1.2318)}{\sqrt{n}}$

$\sqrt{n} = \frac{2.5297}{0.1}$

$n = (25.29)^2$

$n = 639.5$ □

Hence we need 600 more samples