48243401
徐杜飞扬
管理科学作业 4

1. q = F^{-1}((125 – 65) / (125 – 65 + 65 – 25)) = F^{-1}(0.6) = 838.0

2.第二个 证明如下：

Let:

$$F(\mathrm{q}) = \int_{-\infty}^{q} f(q)dq$$

Because f' (q) and f(q) share the same possibility distribution when q > 0,

$$f'(\mathrm{q}) = \mathrm{C} \cdot f(\mathrm{q}) \ \ (C\ is\ a\ constant, q > 0)$$

For easier calculation, Let $f'(\mathrm{q}) = \mathrm{C} \cdot f(\mathrm{q})$ when q <= 0

Let:

$$\mathrm{G}(\mathrm{q}) = \int_{-\infty}^{q} f'(q)dq$$

So,

$$G(q) = C \cdot F(q)$$

According to normalization,

$$F'(\infty) = G(\infty) - G(0) = C \cdot (F(\infty) - F(0)) = 1$$
$$F(\infty) = 1$$

So,

$$C = \frac{1}{1 - F(0)}$$

$$\therefore\ F'(q) = G(q) - G(0) = C\big(F(q) - F(0)\big)$$

$$\therefore\ F'(q) - F(q) = CF(q) - CF(0) - F(q) = \frac{F(0) \cdot (F(q) - 1)}{1 - F(0)} < 0$$

$$\therefore\ F'(q) < F(q)$$

Let:

$$x = F'(q_1) = F(q_2) > F'(q_2)$$

Because $\frac{dF\prime(q)}{dq} > 0$, $\frac{dF(q)}{dq} > 0$, so,

$$q_1 > q_2$$

So,

$$F'^{-1}(x) > F^{-1}(x)$$

故第二种订货量更大。