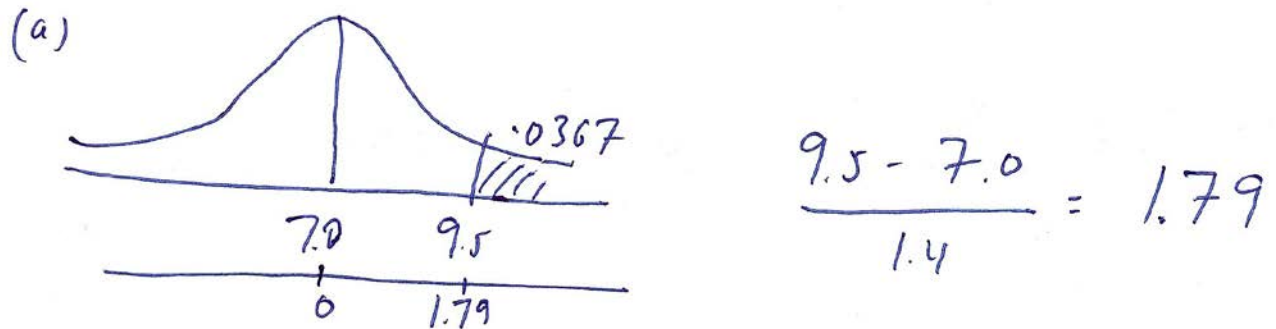

SOLUTIONS TO:

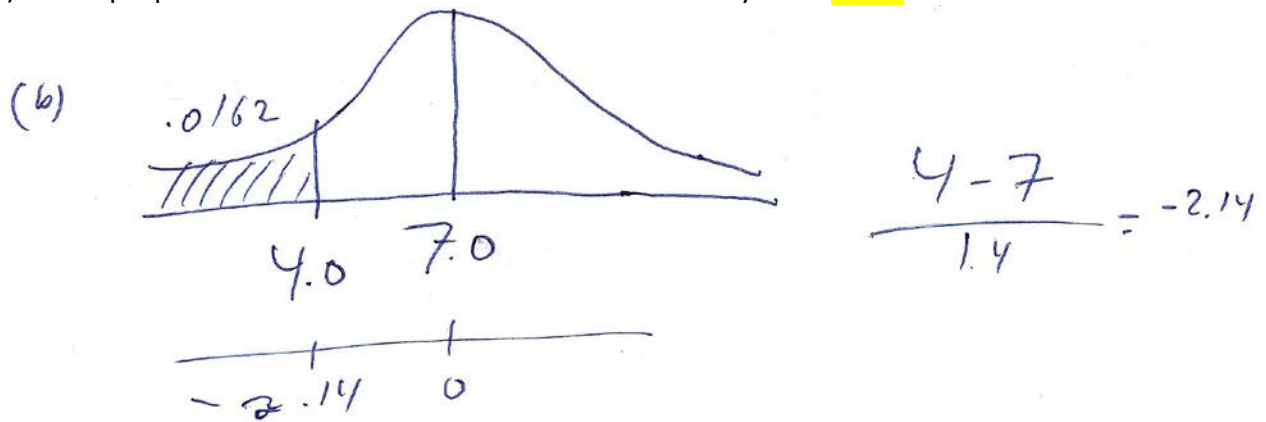
TEST YOUR KNOWLEDGE: Normal Distributions

1. The Dexter company manufactures a new kind of light bulb based on the latest LED technology. The (population) mean life of a Dexter bulb is 7.0 years with a population standard deviation of 1.4 years. The mean life of a Dexter bulb is normally distributed.

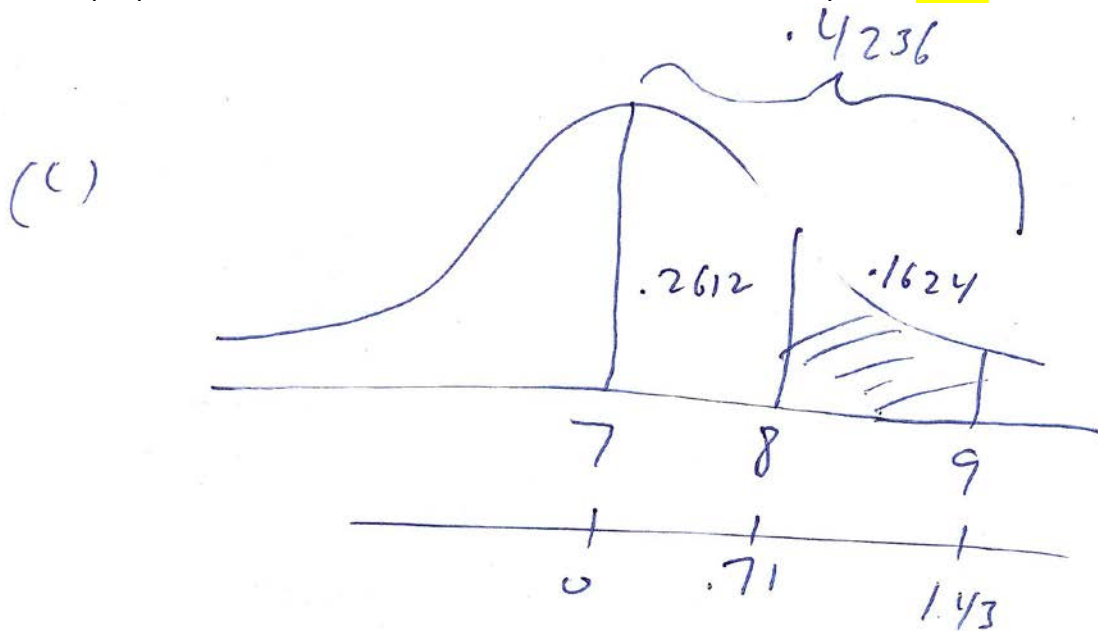
(a) What proportion of Dexter bulbs will last more than 9.5 years? .0367



(b) What proportion of Dexter bulbs will last less than 4.0 years? .0162



(c) What proportion of Dexter bulbs will last between 8.0 and 9.0 years? **.1624**



(d) A Dexter bulb that lasts exactly 7.0 years, would be at what percentile? **50th**

In the normal distribution the mean is = to the median (50th percentile).

(e) Calculate the 90th percentile for a Dexter bulb. **8.79 years**

$$1.28 = \frac{X - 7}{1.4} \quad X = 7 + 1.792 = 8.79 \text{ years}$$

(f) Calculate the 28th percentile for a Dexter bulb. **6.19 years**

$$-.58 = \frac{X - 7}{1.4} \quad X = 7 - 0.812 = 6.19 \text{ years}$$