

Problem 2

Exercise 14a on page 305.

The approximate probability that the professor has finished grading before the 11:00pm news is 0.6026.

The time the professor spent grading is 250 minutes.

$$6 : 50 + 10mins = 7 : 00$$

$$11 : 00 - 7 : 00 = 4hours$$

$$4hx \cdot 60 \frac{mins}{hour} = 240mins$$

$$10mins + 240mins = 250mins$$

Accoring to Central Limit Theorum

$$\lim_{n \rightarrow \infty} P \left(\frac{T_0 - n\mu}{\sqrt{n}\sigma} \leq z \right) = \Phi(z)$$

n is large enough, according to rule of thumb

$$n = 40 > 30$$

The values from the problem into the formula

$$\frac{T_0 - n\mu}{\sqrt{n}\mu} = \frac{250mins - 40 \cdot 6mins}{\sqrt{40} \cdot 6mins} = 0.2635$$

The value from table A.3 on page 789 the textbook is used

$$\Phi(0.2635) = 0.6026$$