13.4-3.  
(a) Because of the randomness in the algorithm, the output will vary.
(b) Because of the randomness in the algorithm, the output will vary.

13.3-7. 
(a) \[ f(x) = x^3 - 60x^2 + 900x + 100 \]
\[ f'(x) = 3x^2 - 120x + 900 \text{ and } f''(x) = 6x - 120 \]
Stationary Points: \[ f'(x^*) = 0 \Rightarrow x^* \text{ is either 10 or 30 (stationary points of } f). \]
\[ f''(10) = -60 < 0 \Rightarrow x^* = 10 \text{ is a local maximum.} \]
\[ f''(30) = 60 > 0 \Rightarrow x^* = 30 \text{ is a local minimum.} \]
End Points: \[ f'(0) = 900 > 0 \Rightarrow x = 0 \text{ is a local minimum.} \]
\[ f'(31) = 63 > 0 \Rightarrow x = 31 \text{ is a local minimum.} \]

(b)  

(c) \[ x = 15.5, f(x) = Z_c = 3558.9, T = 0.2Z_c = 671.775 \]
\[ L = 0, U = 31, \sigma = (U - L)/6 = 5.167 \]
The random number obtained from Table 20.3 is 0.09656. From Appendix 5, \[ P\{Y \leq -1.315\} \approx 0.09656, \]
with \( Y \) a standard Normal random variable, \( N(0, 5.167) = -1.315 \cdot 5.167 = -6.79. \)
\[ x = 15.5 + N(0, 5.167) = 8.71, Z_n = f(x) = 4047.6 \]
Since \( Z_n > Z_c \), accept \( x = 8.71 \) as the next trial solution.
(d) Because of the randomness in the algorithm, the output will vary.