

#7  $X =$  mass of lettuce head

$$X \sim N(550, 20^2)$$

$$(a) P(500 < X < 600) = P(-5/2 < Z < 5/2) = \underline{0.988}$$

$$z = \frac{500 - 550}{20} = -5/2 \quad \text{normalcdf}(-2.5, 2.5)$$

$$z = \frac{600 - 550}{20} = 5/2$$

(b)  $p =$  mass of the smallest lettuce in the top 10%

90<sup>th</sup> percentile

$$z = \text{invnorm}(0.90) = 1.282$$

$$z = \frac{x - \mu}{\sigma}$$

$$1.282 = \frac{p - 550}{20} \Rightarrow \boxed{p = 576 \text{ g}}$$

$$(c) P(X > 540) = P(Z > -1/2) = 0.691$$

$$z = \frac{540 - 550}{20} = -1/2 \quad \text{normalcdf}(-0.5, 9)$$

$\boxed{830 \text{ lettuce heads}}$

(d)  $Y =$  mass of a lettuce at food value

$$P(Y \geq \underline{600}) = 0.15 \leftarrow 85^{\text{th}} \text{ percentile}$$

$$P(Y \leq \underline{540}) = 0.10 \leftarrow 10^{\text{th}} \text{ percentile}$$

$$z = \text{invnorm}(0.85) = 1.0364 = \frac{600 - \mu}{\sigma}$$
$$z = \text{invnorm}(0.10) = -1.2816 = \frac{540 - \mu}{\sigma}$$

$$\begin{cases} 1.0364\sigma + \mu = 600 \\ -1.2816\sigma + \mu = 540 \end{cases}$$

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$$2.318\sigma = 60$$

$$\sigma = 25.9 \text{ g}$$

$$\mu = 573 \text{ g}$$

$$E(X) = \mu = 573 \text{ g}$$

$$\text{Var}(X) = \sigma^2 = 670 \text{ g}^2$$

$$\#8. M \sim N(1.02, \sigma)$$

$$P(M < 1.0) < 0.01$$

$$-2.326 = \frac{1 - 1.02}{\sigma} \Rightarrow \sigma = 0.00860$$



$$\sigma^2 = 0.0000739 \text{ kg}^2$$

$$z_{\text{invnorm}}(0.01) = -2.326$$

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$$\boxed{10Q} \quad \#2(a) \quad X = \text{number late} \quad X \sim B(200, 0.06)$$

$$P(X=2) = \text{binomial pdf}(200, 0.06, 2)$$

$$\#5(a) \quad z = \frac{130 - 120}{8.3} = 1.205$$

$$P(X > 130) = P(Z > 1.205) = 0.114$$

$$(b) \quad (0.114)(500) = \underline{\underline{57.0 \text{ cups}}}$$

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#6(a) STAT ↓CALC 1-VAR stats  $L_1, L_2$

$$\bar{X} = 2.26$$

$$(b) P(X > 5) = 1 - P(X \leq 5) = 0.0279$$

X #1  $2a^2 + 3a + 3a^2 + 2a + 2a^2 + a = 1$

$$7a^2 + 6a - 1 = 0$$

$$a = \frac{-6 \pm \sqrt{36 + 28}}{2(7)} = \frac{-6 \pm \sqrt{64}}{14}$$

$$a = \frac{-6 \pm 8}{14} = \frac{2}{14} = \frac{1}{7}$$

$$\begin{array}{r} 2 \\ 42 \\ 51 \\ \underline{36} \\ 131 \end{array}$$

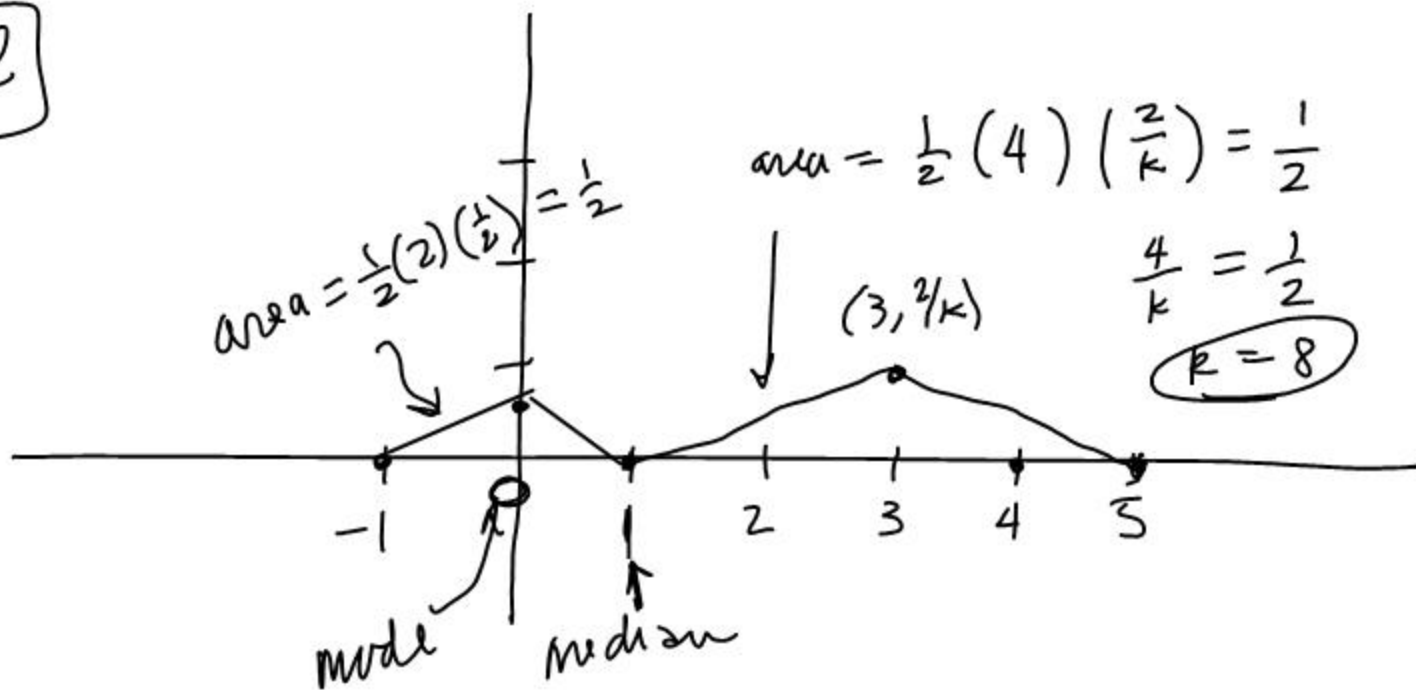
$$E(X) = \frac{2}{49}(1) + \frac{21}{49}(2) + \frac{17}{49}(3) + \frac{9}{49}(4) = \frac{131}{49}$$

Mode = 2

X	1	2	3	4
P(X ≤ x)	2/49	23/49	40/49	49/49

Median = 2.5

#2



$$P(0 \leq X \leq 3 \mid X \geq 1) = \frac{P(1 \leq X \leq 3)}{P(X \geq 1)}$$

HW  1-6

Mon

Wed or Fri TEST