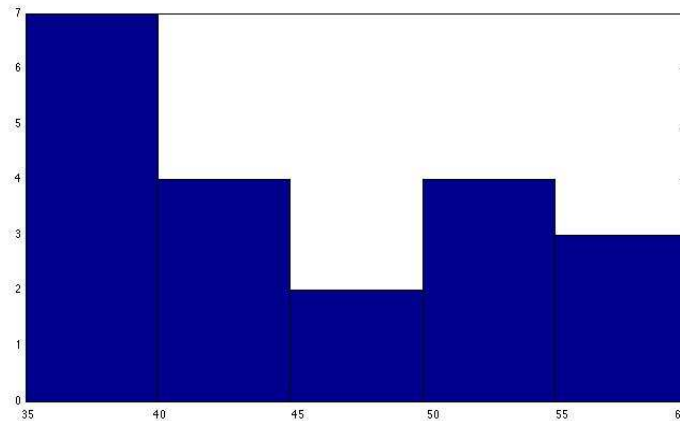# Math 151 – Sample Exam 1 Answers– Fall 2007 – Louis Gross

1. (a) Positively correlated, r^2 in the range .5-1 (exact r^2 is .83)
   (b) using the points (100, 10) and (130, 50), y = (4/3) x -123
   (c) change is (4/3)*150 – 123 = 77 cm so height = 227 cm
   (d) below height of 92 cm , which makes no sense since individuals grow in height

2. mean = 4, median = 4 range = 7, variance = 15/2, standard deviation = $\sqrt{(15/2)}$ = 2.74

3. (a) y = 25, (b) y = - (ln5)/2 = -.805, (c) x = $\sqrt{(e^3 – 4)}$ = 4.0

4. (a) N(t) = 100 $(\sqrt{(8/5)})^t$ = 100 $(1.26)^t$ or N(t)=100 $e^{.23t}$
   (b) at t = 6 months

5. (a) M_L = $10^{-2/3} M_R^{-2/3}$ or M_L = $.215 M_R^{-2/3}$ from
   (b) M_L for species A is 1.58 times the M_L for species B so it is less than twice

6. (a)

(b) midrange 47 and arithmetic mean is smaller than midrange
(c) 7/20

7. (a) D(0) = 20 mg/ml

   (b) D(t) = 20 $e^{-.29 t}$ or D(t) = 20 $(.1)^{t/8}$ or D(t) = 20 $10^{-t/8}$

   (c) t = 10.4 hr