

PART I: YOU MUST SHOW ALL WORK FOR FULL CREDIT!!!

1.) $x^2 + 2x + 2 = 0$ $x = 1 \pm i$
 $x^2 + 2x + 1 = -2 + 1$
 $(x+1)^2 = -1$ $x^2 - 2x + 2 = 0$
 $x = -1 \pm i$ $x^2 - 2x + 1 = -2 + 1$
 $(x-1)^2 = -1$ $x = 1 \pm i$

2.) least amount of bias
1

3.) graph in calc
 2.56
2

4.) normal cdf
 .8414899445
3

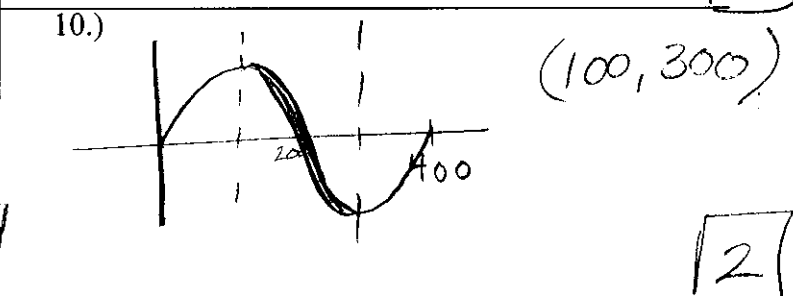
5.) $(m^3 + 3m^2)(-1m + 12)$
 $m^2(m+3) - 4(m-3)$
3

6.) put both in calc
3

7.) $\frac{157}{229}$
1

8.) Recursive need $a_1 =$
 geometric $r = \frac{1}{2}$
1

9.) sum of all 6 weeks
 rate 1.10 to gain
 10% each week
1

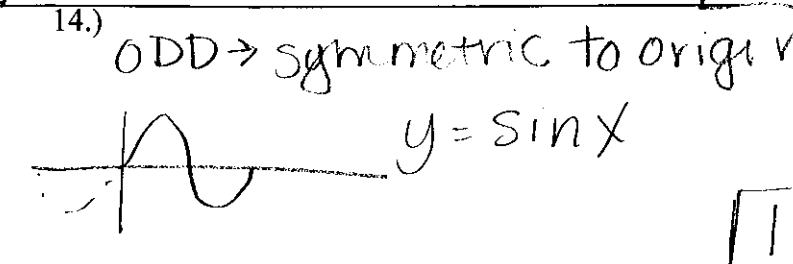


11.)
$$\begin{array}{r} x^2 + 0 + 1 + 4 \\ x+2 \overline{) x^3 + 2x^2 + x + 6} \\ \underline{-x^3 + 2x^2} \\ 0x^2 + x + 1 \\ \underline{-x + 6} \\ 0x + 7 \end{array}$$

2

12.) value that contains majority of data
2

13.) $.81^{\frac{1}{2}} \rightarrow .9825931939$
1



15.) $2d^4 + 6d^3 - 18d^2 - 54d$
 $2d^3(d+3) - 18d(d+3)$
 $(2d^3 - 18d)(d+3)$
 $2d(d^2 - 9)(d+3)$
 $2d(d-3)(d+3)$ [3]

16.) $r = 57.29577951$
 2nd APPS [1]

17.) $\frac{WF}{WF} \frac{1}{J} + \frac{1}{W_{JF}} = \frac{1}{F} \frac{JW}{JW}$
 $WF + JF = JW$ $J = \frac{WF}{W-F}$
 $WF = JW - JF$
 $WF = J(W-F)$ [3]

18.) trial & error [3]

19.) $y = 1$
 focus $(+2, -3)$
 vertex $(2, -1)$
 $p = 2$ [4]

20.) $(m+p)^2 = (m+p)(m+p)$
 $m^2 + 2mp + p^2$
 $(a^2 + b^2)(a^2 + b^2) = a^4 + 2a^2b^2 + b^4$ [4]

21.) go to -4 on graph
 + get y value [3]

22.) = initial (rate) $\frac{\text{time}}{\text{life}}$
 Rate = 1 + .3 [4]

23.) put in matrix
 in calc [2]

24.) [4]

25.) Amplitude - it will show how much air gets in someone's lungs for deep vs shallow breath

26.) $(3^{\frac{1}{5}})^2 = 3^{\frac{2}{5}}$
 $\sqrt[5]{3^2} = \sqrt[5]{9}$
 multiply exponents then use power root

27.) $x i (i - 7i)^2$
 $x i (-6i)^2$
 $x i (36i^2)$
 $36 x i^3$
 $-36 x i$

28.) $\sin^2 \theta + \cos^2 \theta = 1$
 $\sin^2 \theta + (-.7)^2 = 1$ $\frac{S}{A}$
 $\sqrt{\sin^2 \theta} = \sqrt{.51}$ $\frac{T}{C}$
 $\sin \theta = .7141428429$
 $\tan \theta = \frac{\sin}{\cos} = \frac{.7141428429}{-.7}$
 -1.020204061
 -1.02

29.) $6 \text{ min} \rightarrow 360 \text{ sec}$
 $226 - 2(38) = 150$
 $226 + 2(38) = 302$
 Yes, not in 95% CI

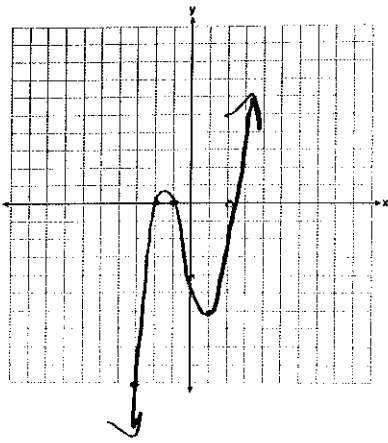
30.) $f(x) = \log(x-4) \rightarrow (5, 0)$
 $h(x) = (2, 0)$
 $f(x) \quad 5 > 2$

31.) $(50, 156.25) \quad (70, 306.25)$
 $\frac{306.25 - 156.25}{70 - 50}$
 $\frac{150}{20} = 7.5$

As speed increases
 by 1 mph over 50 mph
 breaking distance
 increases by 7.5 ft

32.) **Part III**
 $P(A) = .6$
 $P(B) = .5$
 $P(A \cup B) = .8$
 $.6 + .5 - x = .8$
 $x = .3$
 $(.6)(.5) = .3$
 $.3 = .3 \checkmark$
 Yes independent

33.)



$$\begin{aligned}
 x^3 + x^2 - 4x - 4 &= 0 \\
 x^2(x+1) - 4(x+1) &= 0 \\
 (x^2 - 4)(x+1) &= 0 \\
 (x+2)(x-2)(x+1) &= 0 \\
 \hline
 & \quad -2 \quad | \quad 2 \quad | \quad -1
 \end{aligned}$$

34.)

$$7 = 20(.5)^{t/8.02}$$

$$.35 = .5^{t/8.02}$$

$$\frac{\log .35}{\log .5} = \frac{t}{8.02} \frac{\log .5}{\log .5}$$

$$(8.02) 1.514573173 = \frac{t}{8.02} (8.02)$$

12.14687685

12 days

35.)

$$\sqrt{2x-7} + x = 5$$

$$\sqrt{2x-7} = (5-x)^2$$

$$2x-7 = 25 - 10x + x^2$$

$$x^2 - 12x + 32 = 0$$

$$(x-4)(x-8) = 0$$

4	8
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Checks

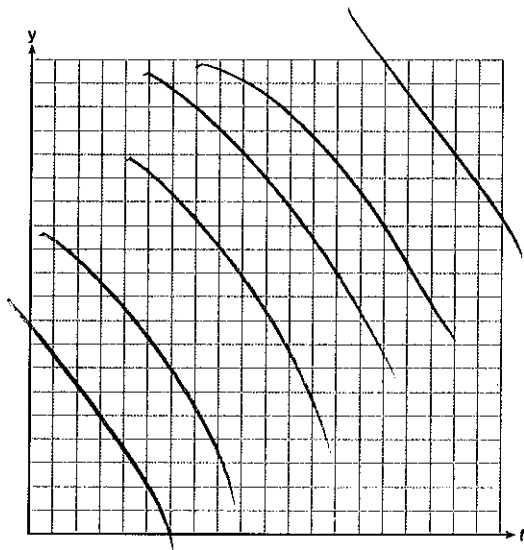
$$x = 4 \checkmark$$

~~$$x = 8$$~~

36.) Group 2 has several students that read faster

Since -1.4 or less occurs about 10% of the time its not unusual

37.



$$A = 5000(1.045)^n$$

$$B = 5000\left(1 + \frac{.046}{4}\right)^{4n}$$

$$A = 6511.30$$

$$B = 6578.87$$

\$67.57 more

16.2 yr

$$10,000 = 5000(1.0115)^{4n}$$

$$2 = 1.0115^{4n}$$

$$\frac{\log 2}{\log 1.0115} = \frac{4n \log 1.0115}{\log 1.0115}$$

$$15.15489525$$