Name _____ Review # 4

January 2018 Regents Due: Tues. 5/31/19

Work must be shown for each question in order to receive credit.

1. Random Sample
   - not entire population
   - no bias, representative of all employees

4 3

2. $\sqrt{x+1}-1=x$

$(\sqrt{x+1})^2=(x+1)^2$

$x+1=x^2+2x+1$

$0=x^2+x$

$0=x(x+1)$

$x=0 \mid x=-1$

Check:

$x=0$: $\sqrt{0+1}-1=0$, $\sqrt{1}-1=0$ ✓

$x=-1$: $\sqrt{-1+1}-1=-1$, $\sqrt{0}-1=-1$ ✓

$\{0,-1\}$

4 2

3. $y=-2x+14 \rightarrow 2x+y=14$ ①

$3x-4z=2$ ②

$3x-y=16$ ③

① $2x+y=14$

③ $3x-y=16$

$5x=30$

$x=6$

② $3x-4z=2$

$3(6)-4z=2$

$18-4z=2$

$-4z=-16$

$z=4$

4 2

4. Feb 14th $\rightarrow x=44$

$y=3.06\sin(0.017\cdot 44-1.40)+12.23$

$y\approx 10.4$ hours

Mode needs to be in radians

4 2

5. $A=220\left(\frac{1}{2}\right)^{\frac{t}{12}}$

$t=12 \quad A=220\left(\frac{1}{2}\right)^{\frac{12}{12}}=110$

6. $(x+a)(x+b)$

$=x(x+b)+a(x+b)$

$=x^2+bx+ax+b^2$

$=x^2+(a+b)x+b^2$

$\neq x^2+abx+ab$ $\neq abx$

3 4

7. $Z_L=-100$

$Z_U=\frac{64.9-79}{7}=-2.014$

Prob = normalcdf(-100, -2.014)

$=.022$

$(.022)(440)\approx 10$ students

8. $y=2.5(1-2.7^{-.10x})$

$=2.5-2.5(2.7^{-.10x})$ Neg Exp Rule $=2.5-2.5\left(\frac{1}{2.7^{.10x}}\right)$

$=2.5-2.5(2.7^{-.05x})^2$ Power Rule

$\neq 2.5-2.5(2.7^{-2})(2.7^{0.5x})$

or Type original into Y, and see which equation doesn't produce same table or graph

store

25. $(2+4i)(3-i)$
$= 6-2i+12i-4i^2$
$= 6+10i-4i^2$ ← mistake, $i^2=-1$, not 1
$= 6+10i-4(1)$
correction
$= 6+10i-4(-1)$
$= 6+10i+4$
$= 10+10i$
check in calc

26. STAT > CALC > 0: ExpReg
$D = 1.223(2.652)^A$
use their variables

27. Fred $t_1 = 8$ Barney $t_2 = 6$
$\frac{1}{8} + \frac{1}{6} = \frac{1}{t_b}$ Multiply by $\frac{LCD}{1}$
$\frac{24t_b}{1}(\frac{1}{8}) + \frac{24t_b}{1}(\frac{1}{6}) = \frac{24t_b}{1}(\frac{1}{t_b})$
$3t_b + 4t_b = 24$
$7t_b = 24$
$t_b = \frac{24}{7} \approx 3.4$

or $\frac{1}{8} + \frac{1}{6} = \frac{1}{T}$
$\frac{7}{24} = \frac{1}{T}$
$\frac{24}{7} = \frac{T}{1}$
$3.4 = T$

33. $f(x)\cdot g(x) - [f(x)+g(x)]$
$= (2x^2+x-3)(x-1) - [(2x^2+x-3)+(x-1)]$
$= 2x^3+x^2-3x-2x^2-x+3-[2x^2+2x-4]$
$= 2x^3-x^2-4x+3-2x^2-2x+4$
$= 2x^3-3x^2-6x+7$

34. $P(M) = \frac{1}{4}$
$P(J) = \frac{116}{459}$
$P(M \text{ or } J) = \frac{47}{108}$
$P(M \text{ or } J) = P(M) + P(J) - P(M \text{ and } J)$
$\frac{47}{108} = \frac{1}{4} + \frac{116}{459} - P(M \text{ and } J)$
$\frac{47}{108} = \frac{923}{1086} - P(M \text{ and } J)$
$P(M \text{ and } J) = \frac{31}{459}$
If independent, $P(M \text{ and } J) = P(M)\cdot P(J)$
$\frac{31}{459} \neq \frac{1}{4}\cdot\frac{116}{459}$
The events are not independent.