A2R Green Review Book Test 4

① - Frequency Increases ∴ Compression
- +3 ∴ Vertical Translation
- Reflected over y
Choice 2

② $\frac{16x^{6/4}y^{-3}}{3x^{1/2}y^{2}}$

$= \frac{16x}{y^5}$

Choice 2

③ $x^2 - 4x - 5/2 = 0$

$= 2x^2 - 8x - 5 = 0$

$64 - 4 \cdot 2 \cdot -5$
104

$\frac{8}{4} \pm \frac{\sqrt{104}}{4}$

$= 2 \pm \frac{2\sqrt{26}}{4}$

$= 2 \pm \frac{\sqrt{26}}{2}$

Choice 3

④ $\frac{153+39+32}{350}$

$= \frac{224}{350}$

$= \frac{16}{25}$

Choice 4

⑤ Product of complex conjugates is a real number
Choice 3

⑥ Large segment of population not represented
Choice 1

⑦ $x^3 + 4x^2 - 5(x-7)$
Choice 1

⑧ $s = -16t^2 + 90t + 6$

$s(4) = -16(4)^2 + 90(4) + 6$
$= 110$
Choice 1

⑨ Day of the week is least confounding variable
Choice 2

⑩ Girl = 15
Boy > 90 = 5
Girl > 90 6
$P(G) + P(>90) - P(G>90)$
$\frac{15}{28} + \frac{11}{28} - \frac{6}{28} = \frac{20}{28}$
Choice 2

⑪ Symmetry about y axis
Choice 1

⑫ Decay bc value decreases.
- Exp Reg $y = 2880(.75)^x$
$100 - 25 = 75\%$
Choice 2

(13.) Finite Series

$$S_n = \frac{a_1 - a_1 r^{n-1}}{1-r}$$

$a_1 = 6000$

$r = 1.4 \quad (140\%)$

$$S_n = \frac{6000 - 6000(1.4)^{13}}{1-1.4}$$

(14.) $\Rightarrow x^2 = 10x - 34$

$\Rightarrow x^2 - 10x + 25 = -34$ (+25)

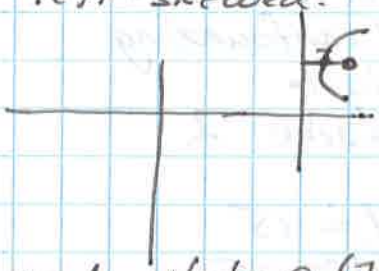
$\Rightarrow (x-5)^2 = -9$

(15.) $\log_2 8 = 3 \quad (x=8)$

Choice 3

(16.) Choice 3 is left skewed.

(17.)



$a = .1$ Vertex @ $(7,2)$

$(y-k)^2 = \pm 4a(x-h)$

$(y-2)^2 = 4(x-7)$

Choice 1

(18.) Radius = 1

$\therefore$ arc = 3 radii
= 3 radians.

Choice 1

(19.) $A_T = A_0 e^{rT}$

$A_2 = 180 e^{(.028)(2)}$ (48 hours = 2 days)

$= 190.36\ldots$

$= 190$

Choice 1

(20.) $\Rightarrow \frac{1}{(5)32}^4$

$= \frac{1}{16}$

Choice 1

(21.) $x = 4y^3 - 6$

$\frac{x+6}{4} = y^3$

$y = \sqrt[3]{\frac{x+6}{4}} = m^{-1}$

Choice 2

(22.) $P(A|B) = \frac{P(A \text{ and } B)}{P(B)}$

$\Rightarrow \frac{(.09)}{.36}$

$= .25$

Choice 3

(23.) $x^{x+3} \frac{15^{x+3}}{x+3} = \frac{5x^{x+3}}{x+3}$

$\Rightarrow x^2 + 3x - 15 = 5x$

$\Rightarrow x^2 - 2x - 15 = 0$

$(x-5)(x+3) = 0$

$x = 5, -3$

$\boxed{x=5}$

(24.) Choice 3
$(x+1)^2 = (x+1)(x+1)$

(25.) $x^2 + (x+1)^2 = 25$

$\Rightarrow x^2 + x^2 + 2x + 1 = 25$

$\Rightarrow 2x^2 + 2x - 24 = 0$

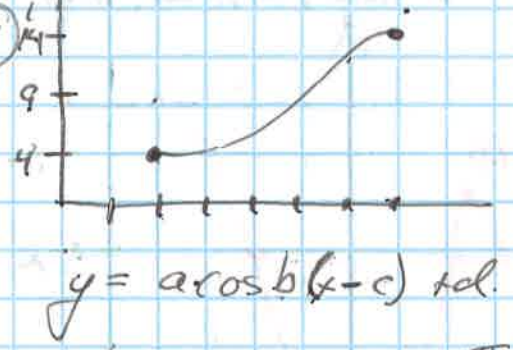
$\Rightarrow x^2 + x - 12 = 0$

$(x+4)(x-3) = 0$

$x = -4, 3$

$(-4, -3)$ $(3, 4)$ $(y = x+1)$

(26)



$y = a\cos b(x-c) + d$

$a = -5$ $\frac{2\pi}{b} = 10 \therefore b = \frac{\pi}{5}$

$c = 2$ $d = 9$

$y = -5\cos\frac{\pi}{5}(x-2) + 9$

(27.) $f(x) = |300 - (50 + 20x)|$

$300 - (50 + 20x) = 50$

$250 - 20x = 50$

$20x = 200$ $\quad x = 10$

$300 - (50 + 20x) = -50$

$250 - 20x = -50$

$x = 15$

The difference between the time it takes him to finish and 300 is 50 minutes.

(28) Small sample size - 25 or
Worded poorly - with negative effect. Could also be "protect millions of people."

(29.) If $x+2$ is a factor then $\frac{p(x)}{x+2}$ yields no remainder

$-2 \mid 1 \quad 2 \quad -3 \quad -6 \quad -6 \quad -12$

$\quad\quad -2 \quad 0 \quad 6 \quad 0 \quad 12$

$1 \quad 0 \quad -3 \quad 0 \quad -6 \quad | \; 0$

remainder

(30.) $\frac{-3^{2t}}{x} + \frac{5^{2t}}{2x} = -6^{2t}$

Clear denominators mult. LCD $\Rightarrow -6 + 5 = -12x$

Combine like terms $\Rightarrow -1 = -12x$

Solve x $\Rightarrow x = 1/12$

(31.) .3 & None (0,1) Inc.
.87 D None (0,1) Dec
$*B > 1$ growth $* B^0 = 1$
$B < 1$ decay for any B

(32.) $\sin\theta = \frac{y}{1} = y$.
$\cos\theta = \frac{x}{1} = x$
radius = 1
$\sin^2\theta + \cos^2\theta = x^2 + y^2 = 1$

(33.) Geometric Series

$S_n = \frac{a_1(1 - a_1 \cdot r^n)}{1 - r}$

$S_{30} = \frac{.5(1 - 1.1^{30})}{1 - 1.1} = 82.247$

(34) $(\sqrt{3x+1})^2 = (x-1)^2$

$3x+1 = x^2 - 2x + 1$

$x^2 - 5x = 0$

$x(x-5) = 0$

$x = 0, 5$

Reject 0 b/c

$\sqrt{3\cdot 0+1} = 0-1$

$1 \neq -1$

(35) Lin Reg on Calc.

$y = 3.17x - 55.80$

$r = 0.939$

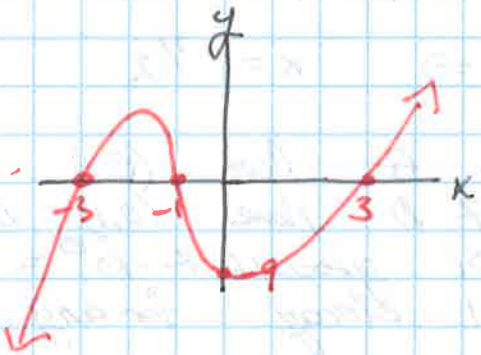
∴ very strong, positive correlation.

(36) $x^3 + x^2 - 9x - 9$

$\Rightarrow x^2(x+1) - 9(x+1)$

$\Rightarrow (x^2-9)(x+1)$

$\Rightarrow (x+3)(x-3)(x+1)$



(37) $p(-2) = -8 + 12 + 8 - 12$

$= 0$

$p(2) = 8 + 12 - 8 - 12$

$= 0$

$p(-3) = -27 + 27 + 12 - 12$

$= 0$

∴ $(x+2), (x-2), (x+3)$ are factors

As $x \to -\infty$, $y \to -\infty$

$x \to +\infty$, $y \to +\infty$

$2^{nd} \to$ Calc $\to$ Max/Min