

Name Key

August 2018 Regents

Review # 10
Due: Thurs. 6/10/19

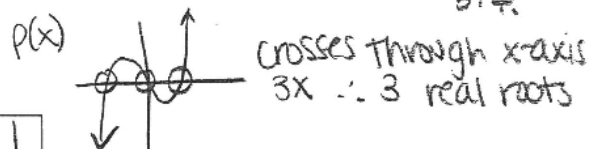
Work must be shown for each question in order to receive credit.

1. $\frac{87e^{.3x}}{87} = \frac{5918}{87}$ OR store button
 $e^{.3x} = \frac{5918}{87}$ OR $.3x \ln e = \ln \frac{5918}{87}$
 $\log_e \left(\frac{5918}{87} \right) = .3x$ $x = 14.066$
 $\ln \left(\frac{5918}{87} \right) = .3x$ **ASK**

2. Controlled experiment
 because he splits the plants
 into 2 groups and assigns
 treatment (light exposure)

3. $X = 14.066$
 $) X^2 + 9 + X + 3 = X^2 + X + 12$
 $) X^2 + 9 - (X + 3) = X^2 - X - 6$
 $) (X^2 + 9)(X + 3) = X^3 + 3X^2 + 9X + 27$
 $) \frac{X^2 + 9}{X + 3} \rightarrow \text{can't factor!}$

4. Graph given, $m(x)$, touches x-axis
 twice (crossing through each time)
 $\therefore$ has 2 real roots. Eliminator choice
 3+4.



5. $2x^3 - 4x^2 - x + \frac{14}{x+6}$
 $x+6 \over 2x^3 + 8x^2 - 25x^2 - 6x + 14$
 $-2x^4 - 12x^3$
 $-4x^3 - 25x^2 - 6x + 14$
 $4x^3 + 24x^2$
 $-x^2 - 6x + 14$
 $x^2 + 6x$
 14

6. inverse = switch $x+y$
 $x = \frac{1}{2}y + 8$
 $2(x-8) = \frac{1}{2}y \cdot 2$
 $2x-16 = y$
 $f^{-1}(x) = 2x-16$

$y_1 =$
 $y_2 = \text{inv}$
 $y_3 = x$
Zoom 6
Zoom 5

7. $(\sqrt{x^2-4x-5})^2 = (2x-10)^2$ OR STORE
 $x^2-4x-5 = 4x^2-40x+100$ OR ASK
 $0 = 3x^2-36x+105$ CK:
 $0 = x^2-12x+35$ $x=7:$
 $0 = (x-7)(x-5)$ $\sqrt{49-28-5} = 14-10$
 $x=7 \quad x=5$ $\sqrt{16} = 4$
 $4=4 \checkmark$

8. $C = 550(1.08)^t$ yearly
 growth constant, monthly
 still needs to = 1.08
 1.) growth constant = $1.00643^1 \neq 1.08$
 2.) growth constant = $1.00643^{12} = 1.08 \checkmark$
 3.) growth constant = $1.00643^{1/12} \neq 1.00$

$\{7, 5\}$ $x=5:$
 $\sqrt{25-20-5} = 10-10$
 $\sqrt{0} = 0$

25. $x^4 - 4x^2 - 12$ $p: -12$
 $= (x^2 - 6)(x^2 + 2)$ $s: -4$

26. $\frac{2x^{3/2}}{(16x^4)^{1/4}} = \frac{2x^{3/2}}{16^{1/4} \cdot x^1}$
 $= \frac{2x^{3/2}}{2x^1}$ *subtract exponents*
 $= x^{1/2}$
 $= \sqrt{x}$

27. $P(4) = 2742.2$ } Look @
 $P(8) = 2937.3$ } Table
 $y = 2560e^{.017185t}$
 avg rate of change $= \frac{\Delta y}{\Delta x} = \frac{P(8) - P(4)}{8 - 4}$
 $= \frac{2937.3 - 2742.2}{8 - 4}$
 $= 48.78$

34 cont
 $(2x-3)(x^2-16)=0$
 $x = \frac{3}{2} \quad | \quad x^2 = 16$
 $x = \pm 4$
 $\left\{ \frac{3}{2}, \pm 4 \right\}$

33. ① $2x + 3y - 4z = -1$
 ② $x - 2y + 5z = 3$
 ③ $-4x + y + z = 16$

$\pm 2: 2x + 3y - 4z = -1$
 $-2x + 4y - 10z = -6$
 ④ $7y - 14z = -7$

$\pm 5: 7y - 14z = -7$
 $-7y + 21z = 28$
 $7z = 21$
 $z = 3$

$2: x - 2y + 5z = 3$
 $x - 2(5) + 5(3) = 3$
 $x - 10 + 15 = 3$
 $x + 5 = 3$
 $x = -2$

$x = -2$
 $y = 5$
 $z = 3$

$2 \pm 3: 4x - 8y + 20z = 12$
 $-4x + y + z = 16$
 ⑤ $-7y + 21z = 28$

$4: 7y - 14(3) = -7$
 $7y - 42 = -7$
 $7y = 35$
 $y = 5$

34. $j(-1) = 2(-1)^4 - (-1)^3 - 35(-1)^2 + 16(-1) + 48$
 $-1 \rightarrow x$
 $= 0$

By the remainder Thm
 $x+1$ is a factor of $j(x)$
 since $j(-1) = 0$.

$2x^3 - 3x^2 - 32x + 48$
 $x+1 \overline{) 2x^4 - x^3 - 35x^2 + 16x + 48}$
 $-2x^4 - 2x^3$
 $-3x^3 - 35x^2 + 16x + 48$
 $3x^3 + 3x^2$
 $-32x^2 + 16x + 48$
 $32x^2 + 32x$
 $48x + 48$
 $-48x - 48$
 0

$2x^3 - 3x^2 - 32x + 48 = 0$
 $x^2(2x-3) - 16(2x-3) = 0$
 $(2x-3)(x^2-16) = 0$