Bellwork Hon Alg 2 Tuesday, January 24, 2017

1. For each quadratic find the equation for the LOS, the coordinates of the Vertex, the y-intercept, and tell if the parabola has a Max or a Min.

a) $y = -2x^2 - 12x - 11$ b) $y = 8x^2 + 15$ c) $y = -3x^2 + 24x$ d) $y = -6(x+1)^2 - 13$

2. Find each product: a) $(4 + 7i)(4 - 7i)$ b) $(3 - 2i)(5 + 6i)$

3. Without actually solving the system of equations state the number of solutions: One, None, or Many

a) $y = 4x - 3$ $12x - 3y = 9$ b) $y = -2x + 5$ $4x - 8y = 24$ c) $y = 3x - 10$ $6x - 2y = 12$ d) $y = 3$ $6x - 2y = 18$

4. Solve each system of equations using any method you wish. You must be able to use each method at least once. Give your answer as an ordered pair or triple.

Methods are: Elimination, Substitution, & Matrices.

When using matrices state the coefficient matrix (A) and constant matrix (B).

a) $y = -2.79x + 13.427$ $2.4x + 110y = 1078.075$

b) $x + y = 14$ $2x - 6y = 4$

c) $8M + 12N = 60$ $12M + 18N = 36$

d) $4x + 3z = -64$ $19y + 7z - x = -23$ $-4z - 8y = 40$

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HON ALG 2 BELLWORK 1-24-17

ANSWERS

(1) a) LOS: $x = \frac{12}{-4} = -3$ Vertex $(-3, 7)$ y-int $= -11$ Max

b) LOS: $x = \frac{0}{16} = 0$ Vertex $(0, 15)$ y-int $= 15$ MIN

c) LOS: $x = \frac{-24}{-6} = 4$ Vertex $(4, 48)$ y-int $= 0$ MAX

d) LOS: $x = -1$ Vertex $(-1, -13)$ y-int $= -19$ Max

(3) a) $y = 4x - 3$

$12x - 3y = 9 \rightarrow y = \frac{9 - 12x}{-3} = -3 + 4x$ same line — Many solutions

b) $y = -2x + 5$

$4x - 8y = 24 \rightarrow y = \frac{24 - 4x}{-8} = -3 + \frac{1}{2}x$ different slopes — 1 sol

c) $y = 3x - 10$

$6x - 2y = 12 \rightarrow y = \frac{12 - 6x}{-2} = -6 + 3x$ parallel lines — NO SOLUTION

d) $y = 3 \rightarrow$ Horizontal Line

$6x - 2y = 18 \rightarrow$ Not Horizontal $\rightarrow$ 1 sol

(4) a) Matrices

$$\underset{2\times 2}{\begin{bmatrix} 2.79 & 1 \\ 2.4 & 110 \end{bmatrix}}_{A} X = \underset{2\times 1}{\begin{bmatrix} 13.427 \\ 1078.075 \end{bmatrix}}_{B}$$

$X = A^{-1} \cdot B$

$$X = \begin{bmatrix} 1.31 \\ 9.7721 \end{bmatrix} \rightarrow (1.31, 9.7721)$$

(2) a) $(4+7i)(4-7i) \longrightarrow a^2+b^2 = 4^2+7^2$

$= 16+49 = 65$

	4	$+7i$
4	16	$+28i$
$-7i$	$-28i$	$-49i^2$ $= +49$

$= 16+49 = \boxed{65}$

b) $(3-2i)(5+6i)$

	3	$-2i$
5	15	$-10i$
$+6i$	$+18i$	$-12i^2$ $= +12$

$= \boxed{27+8i}$

(4) b) Substitution $x+y=14 \longrightarrow y=14-x$

$2x-6y=4$

$2x-6(14-x)=4$

$2x-84+6x=4$

$8x-84=4$

$8x=88$ $\quad x=11$

$y=14-x=14-11$

$y=3$

$(11,3)$

c) ELIMINATION

$3(8M+12N=60) \rightarrow 24M+36N=180$

$2(12M+18N=36) \rightarrow -24M+36N=72$

$0=108$ NOT TRUE

NO SOLUTION

d) Matrices

$$\underset{A}{\begin{bmatrix} 4 & 0 & 3 \\ -1 & 19 & 7 \\ 0 & -8 & -4 \end{bmatrix}} X = \underset{B}{\begin{bmatrix} -64 \\ -23 \\ 40 \end{bmatrix}}$$

3×3 $\quad 3\times1$

$X=A^{-1}B=$ [illegible]

$$= \begin{bmatrix} 8 \\ 11 \\ -32 \end{bmatrix}$$

$(8,11,-32)$