Chapter 3 Quiz A

Name: KEY

Period: _____

+52

1. Write the expression $(2-3i)+5i(1-3i)$ as a complex number in standard form.

$2-3i+5i-15i^2$

$2+2i+15$

$17+2i$

+4 +1 +1 +1 order wrong

2. Find the zeros of $g(x)=2x^2+32$.

$2x^2+32=0$

$2x^2=-32$

$x^2=-16$

$x=\pm\sqrt{-16}$

$x=\pm 4i$

+4 +1 +1 +1 +1 order wrong

3. Solve $x^2-6x+15=0$ by completing the square.

$\frac{6}{2}=3$

$x^2-6x+9=-15+9$

$(x-3)^2=-6$

$x-3=\pm\sqrt{-6}=\pm i\sqrt{6}$

$x=3\pm i\sqrt{6}$

+5 +1 +1 +1 +1 -1 order wrong

+9

4. Write $y = x^2 - 6x + 4$ in vertex form. Then identify the vertex.

$y = (x^2 - 6x + 9) + 4 - 9$

$y = (x-3)^2 - 5$ (+1, +1)

$V(3, -5)$ (+1, +1)

+4

5. Solve $3x^2 - 5x + 8 = 0$ using the Quadratic Formula.

$a = 3$

$b = -5$

$c = 8$

$x = \frac{-(-5) \pm \sqrt{(-5)^2 - 4(3)(8)}}{2(3)}$

$= \frac{5 \pm \sqrt{25 - 96}}{6} = \frac{5 \pm \sqrt{-71}}{6}$

$x = \frac{5 \pm i\sqrt{71}}{6}$ (+1 +1 +1 +1 +1) −1 order wrong

+5

6. Solve the system:

$3x^2 + 4x - y + 1 = 0$

$-x^2 + 2x + y + 2 = 0$

$2x^2 + 6x + 3 = 0$

$a = 2$

$b = 6$

$c = 3$

$x = \frac{-6 \pm \sqrt{6^2 - 4(2)(3)}}{2(2)}$

$= \frac{-6 \pm \sqrt{36 - 24}}{4}$

$= \frac{-6 \pm \sqrt{12}}{4}$ (+.3)

$= \frac{-6 \pm 2\sqrt{3}}{4}$

$= \frac{-3 \pm \sqrt{3}}{2}$ (+1 +1 +1) −1 order wrong

+5

$(2x \quad 3)(x \quad 1)$

$(2x \quad 1)(x \quad 3)$

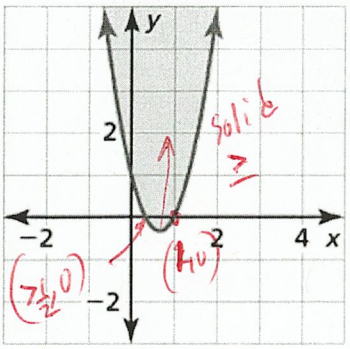
$x = -.63, -2.37$

$y = \pm .33$ $\pm .33$

$(-.63, -.33)$ $(-2.37, \pm .33)$

+13

7. Which inequality is represented by the graph? Show your work/reasoning.



+1 reasoning/work

a) $y > 3x^2 - 4x + 1$

b) $y \geq 3x^2 - 4x + 1$ +1 $(3x-1)(x-1)$ $x = \frac{1}{3}, 1$

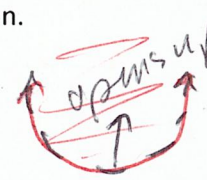
c) $y > x^2 - 2x + 1$

d) $y \geq x^2 - 2x + 1$ $(x-1)(x-1)$ $x = 1$

8. Solve $x^2 - 2x - 15 < 0$ algebraically. Then graph the solution.

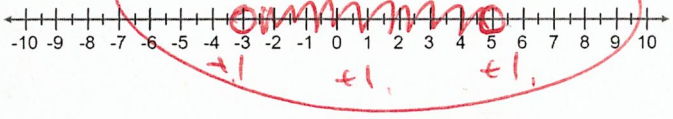
opens up

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

$x = 5, -3$ 

+1 +1 +1 +1 $y >$ shade up

$-3 < x < 5$



+1 +1 +1

+4

9. A bowling ball is dropped from a height of 35 feet.

a. Write a function that gives the height h (in feet) of the bowling ball after t seconds.

+1 $h(t) = -16t^2 + 35$

b. Find the height of the bowling ball after 1 second.

+1 $h(1) = -16 + 35 = 9$ feet

+3

c. How long does the bowling ball take to hit the ground? Round your answer to the nearest hundredth of a second.

$0 = -16t^2 + 35$

$16t^2 = 35$

$t^2 = \frac{35}{16}$

+1

$t = \pm\frac{\sqrt{35}}{4}$

$t = \frac{\sqrt{35}}{4} \approx 1.48$ sec.

+12

10. The temperature y (in degrees Fahrenheit) after t months can be modeled by the function $y = -3t^2 + 18t + 53$, where $1 \leq t \leq 12$.

a. Write the function in vertex form.

$y = -3(t^2 - 6t + 9) + 53 + 27$

$y = -3(t-3)^2 + 80$

+1 +1 +1

+4 +1

b. Find the maximum temperature during the year.

$80^\circ F$

+1 +1

11. A rectangular garden must have a perimeter of 155 feet and an area of at least 1400 square feet. Describe the possible lengths of the garden. Round your answer to the nearest hundredth of a foot.

$2L + 2w = 155$

$L + w = 77.5$

$w = -L + 77.5$

$Lw \geq 1400$

$L(-L + 77.5) \geq 1400$

$-L^2 + 77.5L - 1400 \geq 0$

+5

+1 work

graphing:

$x = 28.67, 48.83$

+1 +1 +1 +1

$28.67 \leq x \leq 48.83$

+9