Honors Algebra 2 1.13 – Test Review

Name: Key - Answers Only! Date: _____

Unit 1 Review * Show work for credit!

Factor completely

1. $x^2 + 10x + 24$

$(x+6)(x+4)$

2. $3x^2 - 15x - 72$

$3(x-8)(x+3)$

3. $2x^2 + 32$

$2(x+4i)(x-4i)$

4. $16x^2 - 81$

$(4x-9)(4x+9)$

Solve each quadratic equation using the indicated method

5. *Quadratic Formula*: $5x^2 = -6x - 1$

$= \frac{-6 \pm \sqrt{16}}{10}$

$x = -1, -\frac{1}{5}$

6. *Completing The Square*: $x^2 + 4x - 12 = 0$

$(x+2)^2 = 16$

$x = -6, 2$

7. *Factoring*: $3x^2 - 17x - 6 = 0$

$(3x+1)(x-6) = 0$

$x = -\frac{1}{3}, 6$

8. *Square Roots*: $2(x-3)^2 + 10 = 24$

$(x-3)^2 = 7$

$x = 3 \pm \sqrt{7}$

Perform the following operation.

9. $(12 + 14i) - (17 + 8i)$

$-5 + 6i$

10. $(3 - 2i)(4 + 5i)$

$22 + 7i$

11. $(2 + 5i)^2$

$-21 + 20i$

12. $\frac{-5 + 2i}{6 - 3i}$

$-\frac{4}{5} - \frac{1}{15}i$

13. $2x^2 - 4x + 3$

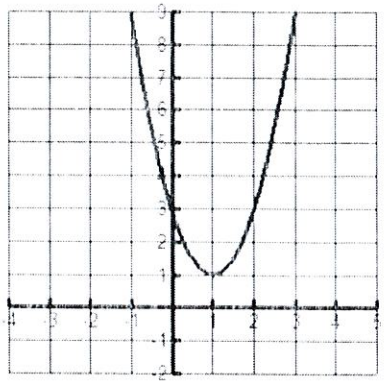
Domain $(-\infty, \infty)$ Range $[1, \infty)$

Extrema min @ (1,1) AOS $x = 1$

Inc. $(1, \infty)$ Dec $(-\infty, 1)$

Y – Int $(0, 3)$ Solutions $x = 1 \pm \frac{i\sqrt{2}}{2}$

End Behavior $x \to -\infty$ $f(x) \to \infty$
$x \to +\infty$ $f(x) \to \infty$



14.

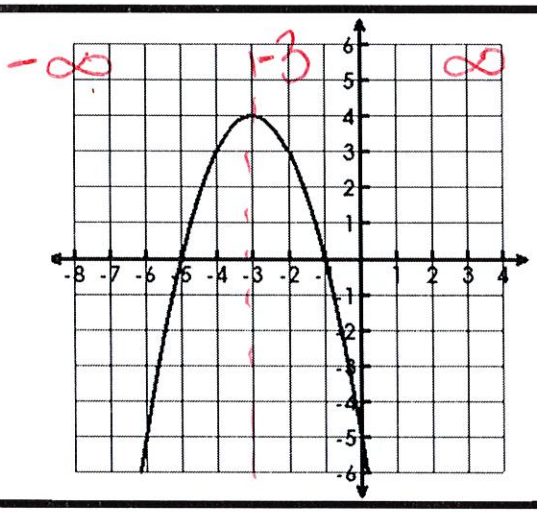
Domain $(-\infty, \infty)$ Range $(-\infty, 4]$

Extrema max @ (-3,4) AOS $x = -3$

Inc. $(-\infty, -3)$ Dec $(-3, \infty)$

Y – Int $(0, -5)$ X - ints $(-5, 0)$ & $(-1, 0)$

End Behavior $x \to -\infty$ $f(x) \to -\infty$
$x \to +\infty$ $f(x) \to -\infty$



15.

	Natural	Whole	Integers	Rational	Irrational	Real	Imaginary	Complex
4/9				✓		✓		✓
8-3i								✓
12	✓	✓	✓	✓		✓		✓

Solve each equation using the best method.

16. $2x^2 + 28 = 4$ Sq. Roots

$x = \pm 2i\sqrt{3}$

17. $2x^2 - 3x = 2$ Factor

$x = -\frac{1}{2}, 2$

18. $x^2 + 8x = -4$ CTS

$x = -4 \pm 2\sqrt{3}$

19. $5x^2 + 3x + 1 = 0$ Quad. Formula

$x = -\frac{3}{10} \pm \frac{i\sqrt{11}}{10}$

20. $x^2 - 2x + 10 = 2$ CTS

$x = 1 \pm i\sqrt{7}$

21. $\frac{2}{5}x^2 + 63 = 13$ Sq. Roots

$x = \pm 5i\sqrt{5}$

22. $-2x^2 + 10x = 15$ Quad. Form

$x = \frac{5}{2} \pm \frac{i\sqrt{5}}{2}$

23. $2x^2 + 12x = 0$ Factor (GCF)

$x = 0, -6$

24. You drop a ball off a cliff at 320 ft. How long does it take the ball to hit the ground? T is the time in seconds and h is the distance in feet. $h = -16t^2 + 320$

$t = 4.47$ seconds

25. A ball is thrown into the air from a height of 256 feet at time t = 0. The function that models this situation is $h(t) = -16t^2 + 96t + 256$, where t is measured in seconds and h is the height in feet.

a. What is the height of the ball at 2 seconds?

At 2 secs. the height is 384 feet.

b. When will the ball reach a height of 144 feet?

The ball will be 144 ft. @ 7 seconds.

c. When will the ball hit the ground?

The ball will hit the ground @ 8 seconds.