GSE Algebra II

1A. 7 – Test Review
Extra Review

Name_____

1. Factor completely:

$x^2 - 2x - 24$

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

2. Factor completely:

$2x^2 + 6x - 36$

$2(x^2+3x-18)$

$2(x+6)(x-3)$

3. Factor completely:

$x^2 + 64$

$(x+8i)(x-8i)$

4. Factor completely:

$50x^2 - 8$

$2(25x^2-4)$

$2(5x-2)(5x+2)$

5. Factor completely:

$2x^2 - 9x + 10$

$(2x-5)(x-2)$

6. Factor completely:

$3x^2 + 4x - 15$

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

7. Factor completely:

$x^3 - 2x^2 - 9x + 18$

$x^2(x-2) - 9(x-2)$

$(x^2-9)(x-2)$

$(x-3)(x+3)(x-2)$

8. Factor completely:

$9x^2 + 100$

$(3x+10i)(3x-10i)$

9. Factor completely:

$16x^2 - 121$

$(4x-11)(4x+11)$

10. Simplify completely:

$(14 + 4i) - (11 - 8i)$

$3 + 12i$

11. Simplify completely:

$(3 - 6i)(5 + 7i)$

$15 + 21i - 30i - 42i^2$

$+42$

$57 - 9i$

12. Simplify completely:

$(3 - 6i)^2$

$(3-6i)(3-6i)$

$9 - 18i - 18i + 36i^2$

-36

$-27 - 36i$

13. Simplify completely:

$\frac{3 - 2i}{5 + i} \cdot \frac{5-i}{5-i}$

$15 - 3i - 10i + 2i^2$

-2

$25 - i^2 = 26$

$\frac{13-13i}{26} = \frac{1-i}{2}$ or $\frac{1}{2} - \frac{i}{2}$

14. Simplify completely:

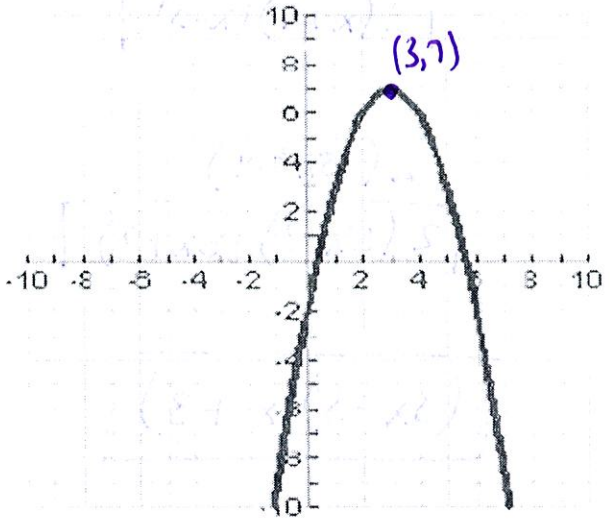
$-\frac{4}{5i} \cdot \frac{5i}{5i} = \frac{-20i}{25i^2}$

$\frac{4i}{5}$

$\frac{-20i}{-25}$

Name_____

15. For the following graph, find the domain, range, intervals of increase and decrease, extrema, y-intercept, the roots, the axis of symmetry, and the end behavior.



Domain: $\mathbb{R}$ Range: $(-\infty, 3]$

INC: $(-\infty, 3)$ DEC: $(3, \infty)$

Extrema: Max @ (3,7)

Y-intercept: (0, -2)

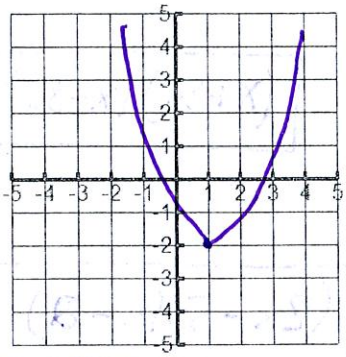
Roots: $(-\frac{1}{2}, 0)$ & $(4\frac{1}{2}, 0)$ Axis of Sym: $x = 3$

$x \to \infty, \quad f(x) \to -\infty$

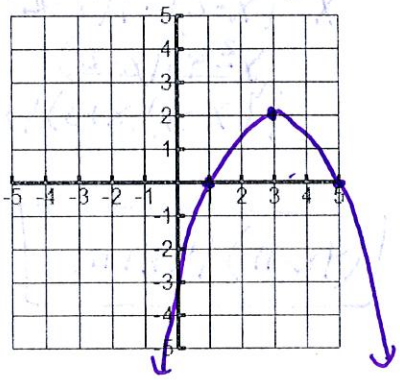
$x \to -\infty, \quad f(x) \to -\infty$

16. Sketch a graph with the following characteristics:

Extrema (1, -2)
Increasing $(1, \infty)$
Decreasing $(-\infty, 1)$



Extrema (3, 2)
Roots at (1, 0) (5, 0)



Into which group or groups does each number go?

	Natural	Whole	Integers	Rational	Irrational	Real	Imaginary	Complex
-11			✓	✓		✓		✓
$\sqrt{13}$					✓	✓		✓
3 – 2i								✓