Student: _____	Instructor: Allison Amico	Assignment: Algebra II MPA2 (2016-2017)
Date: _____	Course: Algebra II	

1. Factor the expression.

$3x^2 + 17x + 20$

$3x^2 + 17x + 20 =$ _____

2. Solve the equation by factoring. Check your answer.

$4x^2 = 4x$

$x =$ _____
(Use a comma to separate answers as needed.)

3. Find the real solutions of the following equation by graphing.

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

The solution(s) is/are _____.
(Use a comma to separate answers as needed.)

4. Factor the expression completely.

$3x^2 - 3x - 126$

$3x^2 - 3x - 126 =$ _____

5. Solve the equation by factoring, using tables, or by graphing.

$3x^2 + 7x = 7$

$x =$ _____
(Simplify your answer. Type an integer or a decimal rounded to the nearest hundredth as needed. Use a comma to separate answers as needed.)

6. Evaluate the discriminant for the equation. Determine the number of real solutions.

$2x^2 + 4x = -2$

What is the discriminant of the quadratic equation?

_____

How many real solutions does the quadratic equation have?

- ○ Two real solutions
- ○ One real solution
- ○ No real solutions

7. Find the zeros of the function.

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

The zero(s) of the function are _____. (Use a comma to separate answers as needed.)

8. Identify the vertex, the axis of symmetry, the maximum or minimum value, and the range of the parabola.

$y = -x^2 - 8x - 13$

The vertex is _____.
(Type an ordered pair.)

The axis of symmetry is $x =$ _____.

The (1) _____ value is _____.

The range of the parabola is y (2) _____ _____.
(Type an integer or a decimal.)

(1) ○ minimum
○ maximum

(2) ○ $<$
○ $\geq$
○ $\leq$
○ $>$

9. Find the real or imaginary solutions of the equation by factoring.

$x^4 - 50x^2 = -49$

The solutions are _____. (Use a comma to separate answers as needed.)

10. Identify the vertex, the axis of symmetry, the maximum or minimum value, and the domain and range of the function.

$f(x) = -(x-9)^2 - 20$

Identify the vertex.

The coordinates of the vertex are _____.
(Type an ordered pair.)

Determine the equation of the axis of symmetry.

$x =$ _____

What is the maximum or minimum value? Select the correct choice below and fill in the answer box to complete your choice.

- ○ **A.** The minimum value is _____.
- ○ **B.** The maximum value is _____.

What is the domain of the function? Select the correct answer below and, if necessary, fill in the answer box to complete your choice.

- ○ **A.** All real numbers ≥ _____
- ○ **B.** All real numbers ≤ _____
- ○ **C.** All real numbers > _____
- ○ **D.** All real numbers < _____
- ○ **E.** All real numbers

What is the range of the function? Select the correct answer below and, if necessary, fill in the answer box to complete your choice.

- ○ **A.** All real numbers > _____
- ○ **B.** All real numbers < _____
- ○ **C.** All real numbers ≥ _____
- ○ **D.** All real numbers ≤ _____
- ○ **E.** All real numbers

11. Factor the following expression.

$x^2 + 14x + 45$

$x^2 + 14x + 45 =$ _____

12. Solve the equation using any method.

$3x^2 - 7x - 6 = 0$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

○ **A.** x = _____
(Simplify your answer. Use integers or fractions for any numbers in the expression. Type an exact answer, using radicals as needed. Use a comma to separate answers as needed.)

○ **B.** There are no real solutions.

13. Factor the difference of two squares.

$16x^2 - 49$

$16x^2 - 49 =$ _____

14. Factor the following polynomial.

$x^3 + 4x^2 + 4x + 16$

$x^3 + 4x^2 + 4x + 16 =$ _____

15. Solve the equation by finding square roots.

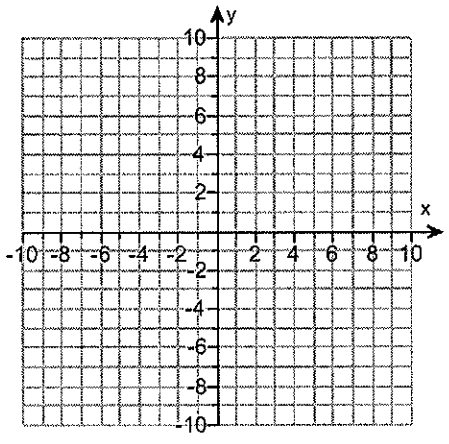
$3x^2 = 48$

x = _____
(Simplify your answer. Type an exact answer, using radicals as needed. Use a comma to separate answers as needed.)

16. Graph the function.

$y = x^2 + 4x + 8$

Use the graphing tool to graph the function.



17. Solve the equation using the Quadratic Formula.

$2x(4x-1)=5$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ○ **A.** $x =$ _____
  (Simplify your answer. Use integers or fractions for any numbers in the expression. Type an exact answer, using radicals as needed. Use a comma to separate answers as needed.)
- ○ **B.** There are no real solutions.

18. Complete the square.

$r^2 - 24r$

Find the missing term that completes the square.

$r^2 - 24r +$ _____
(Simplify your answer. Type an integer or a fraction.)

19. Factor out the greatest common factor.

$12x^2 - 20x$

$12x^2 - 20x =$ _____

20. Write a polynomial function in standard form with the given zeros.

$x = 3, -1, -8$

Choose the correct answer below.

- ○ **A.** $f(x) = 24 + x^3 - 19x - 6x^2$
- ○ **B.** $f(x) = -24 + x^3 - 19x + 6x^2$
- ○ **C.** $f(x) = x^3 + 6x^2 - 19x - 24$
- ○ **D.** $f(x) = x^3 - 6x^2 - 19x + 24$
- ○ **E.** $f(x) = (x+3)(x-1)(x-8)$
- ○ **F.** $f(x) = (x-3)(x+1)(x+8)$

21. Solve the equation.

$q^2 + 7q + 10 = 0$

$q =$ _____
(Use a comma to separate answers as needed.)

*22. Factor.

$343x^3 + 64y^3$

What is the factored form of $343x^3 + 64y^3$?

- ○ **A.** $(7x + 4y)(49x - 28xy + 16y)$
- ○ **B.** $(7x^3 - 4y^3)(49x^2 + 28x^2y^2 + 16y^2)$
- ○ **C.** $(7x - 4y)(49x^2 - 28xy + 16y^2)$
- ○ **D.** $(7x + 4y)(49x^2 - 28xy + 16y^2)$

23. Write the polynomial in standard form. Then classify it by degree and by number of terms.

$6x^2 - 5 + 9x$

Write the polynomial in standard form. Choose the correct answer below.

- ○ **A.** $-5 + 9x + 6x^2$
- ○ **B.** $6x^2 + 9x - 5$
- ○ **C.** $-5 + 6x^2 + 9x$
- ○ **D.** $6x^2 - 5 + 9x$

Classify the polynomial.

The polynomial is a (1) _____ (2) _____.

(1)
- ○ quadratic
- ○ constant
- ○ linear
- ○ cubic

(2)
- ○ trinomial
- ○ binomial
- ○ monomial
- ○ polynomial of four terms

24. Solve the following system by substitution.

$$\begin{cases} y = x^2 + 3x + 7 \\ y = -x + 4 \end{cases}$$

Select the correct choice and fill in any answer boxes in your choice below.

- ○ **A.** The solution(s) is/are _____.
  (Type an ordered pair. Use a comma to separate answers as needed.)
- ○ **B.** There is no solution.

25. Solve the equation using any method.

$6x^2 - 4x - 5 = 0$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

○ **A.** $x =$ _____
(Round to the nearest hundredth as needed. Use a comma to separate answers as needed.)

○ **B.** There are no real solutions.

1. $(3x + 5)(x + 4)$

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2. 0,1

---

3. 0,1,2

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4. $3(x + 6)(x - 7)$

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5. $-3.09, 0.76$

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6. 0

One real solution

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7. $-2, 4, 6$

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8. $(-4, 3)$

-4

(1) maximum

3

(2) $\leq$

3

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9. $-7, 7, 1, -1$

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10. $(9, -20)$

9

B. The maximum value is **-20**.

E. All real numbers

D. All real numbers $\leq$ **-20**

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11. $(x + 9)(x + 5)$

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12. A. $x =$ **$-\frac{2}{3}, 3$**

(Simplify your answer. Use integers or fractions for any numbers in the expression. Type an exact answer, using radicals as needed. Use a comma to separate answers as needed.)

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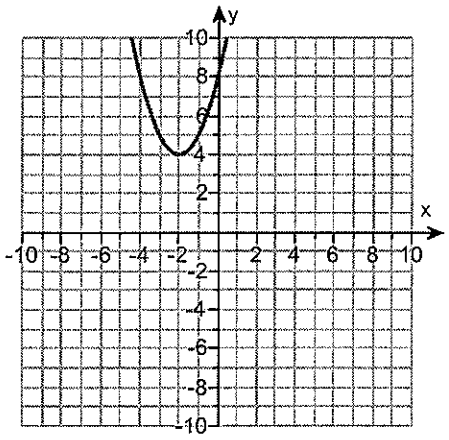
13. $(4x + 7)(4x - 7)$

14. $(x^2 + 4)(x + 4)$

15. $4, -4$

16.



17. A. $x = \dfrac{1 - \sqrt{41}}{8}, \dfrac{1 + \sqrt{41}}{8}$

(Simplify your answer. Use integers or fractions for any numbers in the expression. Type an exact answer, using radicals as needed. Use a comma to separate answers as needed.)

18. 144

19. $4x(3x - 5)$

20. C. $f(x) = x^3 + 6x^2 - 19x - 24$

21. $-5, -2$

22. D. $(7x + 4y)(49x^2 - 28xy + 16y^2)$

23. B. $6x^2 + 9x - 5$

(1) quadratic

(2) trinomial

24. A. The solution(s) is/are $(-1,5),(-3,7)$.(Type an ordered pair. Use a comma to separate answers as needed.)

25. A. x = **1.31, − 0.64** (Round to the nearest hundredth as needed. Use a comma to separate answers as needed.)