Algebra 2 - Midterm Exam

Name KEY

Unit 3 Review

Date_____ Period____

Name each polynomial by degree and number of terms.

1) $-5r - 7$

A) linear trinomial
B) quadratic monomial
C) linear monomial
D) linear binomial

r 2 TERMS

2) $-6x^4 + 5x^2 + 8x$

A) fourth degree monomial
B) constant trinomial
C) cubic polynomial with four terms
D) fourth degree trinomial

x^4 3 TERMS

3) $10m^5 - 2m^4 + 10m^3 - 7m^2 - 5m - 8$

A) sixth degree polynomial with five terms
B) fifth degree monomial
C) fourth degree monomial
D) fifth degree polynomial with six terms

m^5

4) -9

A) fifth degree monomial
B) constant monomial NO VARIABLE
C) linear polynomial with 0 terms
D) constant binomial

5) $m^5 - 2m^4 + m^3$

A) quadratic monomial
B) fifth degree monomial
C) cubic polynomial with five terms
D) fifth degree trinomial

m^5 3 TERMS

6) $-x^5 - x$

A) fifth degree trinomial
B) cubic binomial
C) fifth degree binomial x^5, 2 TERMS
D) quadratic polynomial with five terms

7) $5n^2 + 10n - 5$

A) quadratic trinomial n^2 3 TERMS
B) cubic binomial
C) quadratic monomial
D) cubic trinomial

8) $-9p$

A) ninth degree constant
B) linear trinomial
C) linear monomial p 1 TERM
D) ninth degree monomial

Simplify.

9) $(8 + 4n + 4n^3 + 2n^4) + (8n^4 + 2n + 2n^3 - 2)$

$= 10n^4 + 6n^3 + 6n + 6$

10) $(3a^2 - 1 - 3a - a^3) - (2a^3 - 2a - 2 + 8a^2)$

$= 3a^2 - 1 - 3a - a^3 - 2a^3 + 2a + 2 - 8a^2$

$= -3a - 5a^2 - a + 1$

Find each product.

11) $(2x + 8)(6x - 1)$

$= 12x^2 - 2x + 48x - 8$

$= 12x^2 + 46x - 8$

12) $(7x + 6)(5x^2 + 3x - 8)$

$= 35x^3 + 21x^2 - 56x + 30x^2 + 18x - 48$

$= 35x^3 + 51x^2 - 38x - 48$

Divide. You can use either long division or synthetic division.

13) $(a^3 + 11a^2 + 20a - 54) \div (a + 5)$

$a^2 + 6a - 10$

$a+5 \overline{)\, a^3 + 11a^2 + 20a - 54}$

$\ominus\ a^3 + 5a^2$

$6a^2 + 20a$

$\ominus\ 6a^2 + 30a$

$-10a - 54$

$\ominus\ -10a - 50$

-4

$a^2 + 6a - 10 - \frac{4}{a+5}$

LONG DIVISION

-5	1	11	20	-54
		-5	-30	50
	1	6	-10	-4
	a^2	a^1	a^0	REMAINDER

$a^2 + 6a - 10 - \frac{4}{a+5}$

SYNTHETIC DIVISION

14) $(4m^3 - 42m^2 + 79m + 9) \div (m - 8)$

$$m-8 \overline{)\,4m^3 - 42m^2 + 79m + 9}$$ quotient $4m^2 - 10m - 1$

$\ominus\ 4m^3 - 32m^2$

$-10m^2 + 79m$

$\ominus\ -10m^2 + 80m$

$-1m + 9$

$\ominus\ -1m + 8$

1

$$\boxed{4m^2 - 10m - 1 + \frac{1}{m-8}}$$

15) $(n^3 - 11n^2 + 5) \div (n - 1)$ ← MISSING n

$$n-1 \overline{)\,n^3 - 11n^2 + 0n + 5}$$ quotient $n^2 - 10n - 10$

$\ominus\ n^3 - n^2$

$-10n^2 + 0n$

$\ominus\ -10n^2 + 10n$

$-10n + 5$

$\ominus\ -10n + 10$

-5

$$\boxed{n^2 - 10n - 10 - \frac{5}{n-1}}$$

8	4	-42	79	9
	↓	32	-80	-8
(*)	4	-10	-1	1 rem.
	m^2	m^1	m^0	

$$\boxed{4m^2 - 10m - 1 + \frac{1}{m-8}}$$

1	1	-11	0	5
	↓	1	-10	-10
(*)	1	-10	-10	-5 rem
	n^2	n^1	n^0	

$$\boxed{n^2 - 10n - 10 - \frac{5}{n-1}}$$