Exam

Name Nesteslia Riddell - Del 1 HW#1

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Add or subtract as indicated. Express the answer as a single polynomial in standard form.

1) $(-7x^2 + 8) - (-x^3 + 3x^2 + 4)$ 1) B

A) $-6x^3 + 3x^2 + 4$ B) $x^3 - 4x^2 + 12$ C) $x^3 - 10x^2 + 4$ D) $-6x^3 + 11x^2 - 4$

2) $(5x^5 - 13x^3 - 14) - (7x^5 + 16x^3 - 4)$ 2) B

A) $-2x^5 - 29x^3 - 18$
B) $-2x^5 - 29x^3 - 10$
C) $-41x^8$
D) $-2x^5 - 6x^3 - 18$

3) $(2x^7 - 18x^6 + 14) - (8x^6 + 7x^7 + 3)$ 3) C

A) $-20x^{13}$
B) $-5x^7 - 26x^6 + 17$
C) $-5x^7 - 26x^6 + 11$
D) $-5x^7 - 11x^6 + 17$

4) $(3x^5 + 9x^4 + 6x) + (7x^5 - 6x^4 + 7x)$ 4) A

A) $10x^5 + 3x^4 + 13x$
B) $26x^{10}$
C) $10x + 3x^5 + 13x^4$
D) $13x^5 - 3x^4 + 16x$

Multiply the polynomials using the FOIL method. Express the answer as a single polynomial in standard form.

5) $(-2x - 12)(-2x - 10)$ 5) A

A) $4x^2 + 44x + 120$
B) $4x^2 + 44x + 44$
C) $-4x^2 + 44x + 44$
D) $-4x^2 + 44x + 120$

6) $(x + 7y)(x - 11y)$ 6) B

A) $x - 4xy - 77y$ B) $x^2 - 4xy - 77y^2$ C) $x^2 - 4xy - 4y^2$ D) $x^2 - 7xy - 77y^2$

7) $(x - 7y)(4x - 8y)$ 7) D

A) $x^2 - 36xy + 56y^2$
B) $4x^2 - 36xy - 36y^2$
C) $x^2 - 36xy - 36y^2$
D) $4x^2 - 36xy + 56y^2$

8) $(-2x + 10y)(5x + 6y)$ 8) D

A) $-10x^2 + 50xy + 60y^2$
B) $-10x^2 + 38xy + 38y^2$
C) $-10x^2 - 12xy + 60y^2$
D) $-10x^2 + 38xy + 60y^2$

Multiply the polynomials. Express the answer as a single polynomial in standard form.

9) $(9y + x)(9y - x)$ 9) A

A) $81y^2 - x^2$
B) $81y^2 - 18xy - x^2$
C) $81y^2 + 18xy - x^2$
D) $18y^2 - x^2$

10) $(8x - 5)^2$ 10) B

A) $8x^2 + 25$ B) $64x^2 - 80x + 25$ C) $8x^2 - 80x + 25$ D) $64x^2 + 25$

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11) $(b - z)^2$ 11) D

A) $b^2 - 2bz - z^2$ B) $b^2 + 2bz + z^2$ C) $b^2 - bz + z^2$ D) $b^2 - 2bz + z^2$

12) $(8x + 3y)^2$ 12) B

A) $64x^2 + 9y^2$ B) $64x^2 + 48xy + 9y^2$

C) $8x^2 + 48xy + 9y^2$ D) $8x^2 + 9y^2$

Find the quotient and the remainder.

13) $18x^8 - 30x^3$ divided by $6x$ 13) D

A) $18x^7 - 30x^2$; remainder 0 B) $3x^9 - 5x^4$; remainder 0

C) $3x^8 - 5x^3$; remainder 0 D) $3x^7 - 5x^2$; remainder 0

14) $35x^2 + 10x - 11$ divided by $5x$ 14) D

A) $7x - 9$; remainder 0 B) $7x^2 + 2x - \frac{11}{5}$; remainder 0

C) $35x + 10$; remainder -11 D) $7x + 2$; remainder -11

Factor the difference of two squares.

15) $9 - x^2$ 15) D

A) prime B) $(3 + x)^2$ C) $(3 - x)^2$ D) $(3 - x)(3 + x)$

16) $x^3 - 512$ 16) C

A) $(x - 8)(x^2 + 64)$ B) $(x + 512)(x^2 - 1)$

C) $(x - 8)(x^2 + 8x + 64)$ D) $(x + 8)(x^2 - 8x + 64)$

17) $x^3 + 729$ 17) D

A) $(x - 729)(x^2 - 1)$ B) $(x - 9)(x^2 + 9x + 81)$

C) $(x + 9)(x^2 + 81)$ D) $(x + 9)(x^2 - 9x + 81)$

Factor the polynomial.

18) $x^2 + 3x - 10$ 18) C

A) $(x - 5)(x + 1)$ B) $(x - 5)(x + 2)$ C) $(x + 5)(x - 2)$ D) prime

19) $x^2 + 36$ 19) D

A) $(x + 6)^2$ B) $(x - 6)^2$ C) $(x + 6)(x - 6)$ D) prime

Factor completely. If the polynomial cannot be factored, say it is prime.

20) $7x^2 - 7x - 42$ 20) A

A) $7(x - 2)(x + 3)$ B) $7(x + 2)(x - 3)$ C) $(7x + 14)(x - 3)$ D) prime

21) $5x^2 - 35x + 60$ 21) B

A) $5(x - 4)(x - 3)$ B) $(x - 4)(5x - 15)$ C) $5(x - 12)(x + 1)$ D) prime

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22) $15x^2 - 65x - 50$ 22) A

A) $(15x + 10)(x - 5)$ B) $5(3x - 2)(x + 5)$ C) $5(3x + 2)(x - 5)$ D) prime

23) $6x^2 - 21x - 12$ 23) B

A) $3(2x - 1)(x + 4)$ B) $3(2x + 1)(x - 4)$ C) $(6x - 3)(x + 4)$ D) prime

Use synthetic division to find the quotient and the remainder.

24) $x^5 + 8x^4 + 13x^3 - 8x^2 + 12x + 13$ is divided by $x + 5$ 24) A

A) $x^4 + 3x^3 - 2x^2 + 2x + 2$; remainder 3

B) $x^4 + 3x^3 - 2x^2 + 2x + 3$; remainder 0

C) $x^3 + 3x^2 - 2x + 2$; remainder 3

D) $x^4 + 3x^3 - 2x^2 + 2x - 2$; remainder 5

25) $x^4 - 4$ is divided by $x - 3$ 25) A

A) $x^3 + 3x^2 + 9x + 27$; remainder 77

B) $x^3 + 3x^2 + 9x + 27$; remainder 253

C) $x^3 + 4x^2 + 16x + 64$; remainder 253

D) $x^3 + 7x^2 + 6x + 3$; remainder 77

Nesteshia Liddell-Dell HW #1
Add or Subtract

1. $(-7x^2+8)-(-x^3+3x^2+4)$

$-7x^2+8+x^3-3x^2-4$

$x^3-7x^2-3x^2+8-4$

$= x^3-10x^2-4$

2. $(5x^5-13x^3-14)-(7x^5+16x^3-4)$

$5x^5-13x^3-14-7x^5-16x^3+4$

$5x^5-7x^5-13x^3-16x^3-14+4$

$= -2x^5-29x^3-10$

3 $(2x^7-18x^6+14)-(8x^6+7x^7+3)$

$2x^7-18x^6+14-8x^6-7x^7-3$

$2x^7-7x^7-18x^6-8x^6+14-3$

$= -5x^7-26x^6+11$

4 $(3x^5+9x^4+6x)+(7x^5-6x^4+7x)$

$3x^5+9x^4+6x+7x^5-6x^4+7x$

$3x^5+7x^5+9x^4-6x^4+6x+7x$

$= 10x^5+3x^4+13x$

Multiply the polynomials using the foil Method.

5 $(-2x-12)(-2x-10)$

$= 4x^2 + 20x + 24x + 120$

$= 4x^2 + 44x + 120$

6 $(x+7y)(x-11y)$

$= x^2 - 11xy + 7xy - 77y^2$

$= x^2 - 4xy - 77y^2$

7 $(x-7y)(4x-8y)$

$= 4x^2 - 8xy - 28xy + 56y^2$

$= 4x^2 - 36xy + 56y^2$

8 $(-2x+10y)(5x+6y)$

$= -10x^2 - 12xy + 50xy + 60y^2$

$= -10x^2 + 38xy + 60y^2$

Multiply the Polynomials.

9 $(9y+x)(9y-x)$

$= 81y^2 - 9xy + 9xy - x^2$

$= 81y^2 - x^2$

10 $(8x-5)^2$

$= (8x-5)(8x-5)$

$= 64x^2 - 40x - 40x + 25$

$= 64x^2 - 80x + 25$

11. $(b-z)^2$

$(b-z)(b-z)$

$= b^2 - bz - bz + z^2$

$= b^2 - 2bz + z^2$

12 $(8x+3y)^2$

$= (8x+3y)(8x+3y)$

$= 64x^2 + 24xy + 24xy + 9y^2$

$= 64x^2 + 9y^2 + 48xy$

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Find the quotient and the remainder

13) $18x^8 - 30x^3$ divided by $6x$

$$6x \overline{)\,18x^8 - 30x^3}$$

$3x^7 + 5x^2$

$18x^8$

$-30x^3$

$-30x^3$

0

Step 1 Divide: $\frac{18x^8}{6x} = 3x^7$

Step 2 Multiply: $3x^7 \times 6x = 18x^8$

Step 3 Subtract & bring down $30x^3$

Quotient $= 3x^7 - 5x^2$

Remainder $= 0$

Step 4 Repeat steps 1-3

14) $35x^2 + 10x - 11$ divided by $5x$

$$5x \overline{)\,35x^2 + 10x - 11}$$

$7x + 2$

$35x^2$

$10x - 11$

$10x$

-11

1 step 1 Divide: $\frac{35x^2}{5x} = 7x$

Step 2 Multiply: $7x \times 5x = 35x^2$

Step 3 Subtract & bring down $10x - 11$

Quotient $7x + 2$

Remainder $= -11$

Nesteshia Riddell-Dell HW#1 (5)

Factor the difference of two squares

15) $9-x^2$

$=(3-x(3+x)$

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

$=9-x^2$

16) x^3-512

$(x-8)(x^2+8x+64)$

$=x^3+8x^2+64x-8x^2-64x-512$

$=x^3+8x^2-8x^2+64x-64x-512$

$=x^3-512$

17) x^3+729

$(x+9)(x^2-9x+81)$

$=x^3-9x^2+81x+9x^2-81x+729$

$=x^3-9x^2+9x^2+81x-81x+729$

$=x^3+729$

Nesteshia Riddell-Dell HW #1

(6)

Factor the polynomial

18) $x^2 + 3x - 10$

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

$= x^2 - 2x + 5x - 10$

$= x^2 + 3x - 10$

19) $x^2 + 36$

Prime

Factor completely. If the Polynomial cannot be factored, say it is prime.

20) $7x^2 - 7x - 42$

$= 7(x+2)(x-3)$

$= (7x + 14)(x-3)$

$= 7x^2 - 21x + 14x - 42$

$= 7x^2 - 7x - 42$

21) $5x^2 - 35x + 60$

$(x-4)(5x-15)$

$= 5x^2 - 15x - 20x + 60$

$= 5x^2 - 35x + 60$

22) $15x^2 - 65x - 50$

$= (15x+10)(x-5)$

$= 15x^2 - 75x + 10x - 50$

$= 15x^2 - 65x - 50$

23) $6x^2 - 21x - 12$

$3(2x+1)(x-4)$

$= (6x+3)(x-4)$

$= 6x^2 - 24x + 3x - 12$

$= 6x^2 - 21x - 12$

Use synthetic division to find the quotient and the remainder

24) $x^5+8x^4+13x^3-8x^2+12x+13 \div x+5$

$$x+5\overline{)\,x^5+8x^4+13x^3-8x^2+12x+13}$$

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

$$\begin{array}{r} x^5+5x^4 \\ \hline 3x^4+13x^3-8x^2+12x+13 \\ 3x^4+15x^3 \\ \hline -2x^3-8x^2+12x+13 \\ -2x^3-10x^2 \\ \hline 2x^2+12x+13 \\ 2x^2+10x \\ \hline 2x+13 \\ 2x+10 \\ \hline 3 \end{array}$$

Step 1
Divide
$\frac{x^5}{x} = x^4$

Step 2
Multiply
$x^4(x+5)$
x^5+5x^4

$3x^3(x+5)$
$3x^4+15x^3$

$-2x^2(x+5)$
$-2x^3-10x^2$

Quotient
$= x^4+3x^3-2x^2+2x+2$

Remainder = 3

$2x(x+5)$
$= 2x^2+10x$

$2(x+5)$
$= 2x+10$

25) $x^4 - 4 \div x - 3$

$$x-3 \;\overline{)}\; x^4 - 4$$

$x^3 + 3x^2 + 9x + 27$

$x^4 - 3x^3$ ← $x^3(x-3) = x^4 - 3x^3$

$-4 - 3x^3$

$3x^3 - 9x^2$ ← $3x^2(x-3) = 3x^3 - 9x^2$

$-4 - 9x^2$

$9x^2 - 27x$ ← $9x(x-3) = 9x^2 - 27x$

$-4 - 27x$

$27x - 81$ ← $27(x-3) = 27x - 81$

$-4 + 81 = 77$

Quotient = $x^3 + 3x^2 + 9x + 27$

Remainder = 77