Math 95
EXAM 3 – Spring 2008

Name Key

Answer all questions. Show all necessary work. Place your answer in the column on the right hand side of the paper. Each question is worth 5 points. Good luck.

Simplify for 1 - 3. Leave variables in exponential form with only positive exponents.

1. $\frac{6^8}{6^2}$ $6^{8-2} = 6^6$ 1. B

a) 1^4 b) 6^6 c) 6^{10} d) 6^4

2. $x^4 \cdot x \cdot x^6$ $x^{4+1+6} = x^{11}$ 2. B

a) x^{24} b) x^{11} c) x^{10} d) $3x^{24}$

3. $(-2x^3)^2$ $(-2)^2 x^6 = 4x^6$ 3. D

a) $-2x^6$ b) $-4x^6$ c) $-4x^5$ d) $4x^6$

4. $2(-3x^2y^3)^4$ $2 \cdot (-3)^4 x^8 y^{12} = 2(81)x^8y^{12}$ 4. A

a) $162x^8y^{12}$ b) $-6x^8y^{12}$ c) $-162x^6y^7$ d) $6x^6y^7$

5. Classify $7x^2y^2$ 5. A

a. monomial
b. binomial
c. trinomial
d. none of these

6. Determine the degree of the polynomial: $-4 + 4t^3 + 8t^2 - 15t^6$ biggest 6. 6

a) 5 b) 10 c) 1 d) 11

7. Find the coefficient of the leading term: $-4 + 4t^3 + 8t^2 - 15t^6$ 7. D

a) - 4 b) 4 c) 8 d) -15

8. Find y if x = -3; $y = x^2 + 3x - 6$ $(-3)^2 + 3(-3) - 6$ 8. D

a) -24 b) -21 c) -12 d) -6 $9 - 9 - 6$

9. Combine like terms and write in standard form: $2y^2 - 5.3y + 0.6y^2 + 2y$ 9. B

a) $1.4y^2 - 7.3y$ c) $1.4y^2 - 3.3y$

b) $2.6y^2 - 3.3y$ d) $2.6y^2 - 7.3y$

$2.6y^2 - 3.3y$

Add or subtract

10. $(9x^5 - 3x^3 + 2x^2 + x) + (x^4 - 7x^3 + 2x^2 - x + 9)$ 10. A

a) $9x^5 + x^4 - 10x^3 + 4x^2 + 9$ b) $9x^5 - 10x^3 + 4x^2 + 9$

c) $9x^5 + x^4 - 10x^3 + 4x^2 + 9x$ d) $10x^5 - 10x^3 + 4x^2 + x + 9$

$9x^5 + x^4 - 10x^3 + 4x^2 + 9$

11. $\left(x^3 - \frac{3}{4}x^2 - 9\right) - \left(\frac{1}{3}x^3 + 2x^2 - x + 7\right)$ 11. D

a) $\frac{2}{3}x^3 - \frac{11}{4}x^2 + x - 16$ b) $x^3 - \frac{5}{4}x^2 + x - 2$

c) $-\frac{4}{3}x^3 - \frac{11}{4}x^2 + x - 16$ d) $\frac{2}{3}x^3 - \frac{5}{4}x^2 + x - 16$

$1x^3 - 3/4x^2 - 9 - 1/3x^3 - 2x^2 + x - 7$

$\frac{2}{3}x^3 - \frac{11}{4}x^2 + x - 16$

Multiply

12. $-4x^2(3x^3 - 2x + 5)$ 12. B

a) $-x^5 - 6x^3 + x^2$ b) $-12x^5 + 8x^3 - 20x^2$

c) $-12x^6 + 8x^2 + 20x$ d) $-x^6 - 6x^3 + x^2$

$-12x^5 + 8x^3 - 20x^2$

13. $(4x + 5)^2 = (4x + 5)(4x + 5)$ 13. A

a) $16x^2 + 40x + 25$ b) $16x^2 + 20x + 25$

c) $16x^2 + 25$ d) $4x^2 + 25$

14. $(8a + 3)(a - 2)$ $8a^2 - 16a + 3a - 6$ 14. C

a) $8a^2 + 3a - 6$ b) $8a^2 - 6$

c) $8a^2 - 13a - 6$ d) $8a^2 + 3a - 6$

15. $(6x^3 - 7y^2)(6x^3 + 7y^2)$ 15. A

a) $36x^6 - 49y^4$ b) $12x^3 - 14y^2$

c) $12x^6 - 49y^4$ d) $36x^9 - 49y^4$

$36x^6 - 49y^4$

16. Divide: $(12x^6 - 18x^5 + 15x^3) \div (3x^2)$ 16. B

a) $4x^6 - 6x^5 + 5x^3$ b) $4x^4 - 6x^3 + 5x$

c) $4x^8 - 6x^7 + 5x^5$ d) $4x^4 - 6x^5 + 5x^3$

$\frac{12x^6}{3x^2} - \frac{18x^5}{3x^2} + \frac{15x^3}{3x^2} = 4x^4 - 6x^3 + 5x$

17. Divide using long division: $(6x^2 - 11x - 10) \div (2x - 5)$ 17. 3x + 2

Show all work.

$$\begin{array}{r} 3x + 2 \\ 2x - 5 \overline{)\,6x^2 - 11x - 10} \\ -(6x^2 - 15x) \\ \hline 4x - 10 \\ -(4x - 10) \\ \hline 0 \end{array}$$

18. $7^{-2} \cdot 7^{-4}$ $= 7^{-6}$ 15. B

a) 7^6 b) $\frac{1}{7^6}$ c) 7^8 d) 7^2

19. $(4a^4b^{-3})^2$ $4^2 a^8 b^{-6} = \frac{16a^8}{b^6}$ 19. A

a) $\frac{16a^8}{b^6}$ b) $\frac{4a^6}{b^5}$ c) $\frac{4a^8}{b^6}$ d) $\frac{8a^6}{b^5}$

20. $\left(\frac{3a^{-2}b}{c^3}\right)^{-4}$ $\frac{3^{-4} a^8 b^{-4}}{c^{-12}}$ 20. $\frac{a^8 c^{12}}{81 b^4}$

$= \frac{a^8 c^{12}}{3^4 b^4} = \frac{a^8 c^{12}}{81 b^4}$

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Simplify for 1 - 3. Leave variables in exponential form with only positive exponents.

1. $\frac{7^{12}}{7^4}$ $= 7^{12-4} = 7^8$ 1. B

a) 7^3 b) 7^8 c) 7^{16} d) 7^{48}

2. $x^8 \cdot x \cdot x^4$ $x^{8+1+4} = x^{13}$ 2. D

a) x^{32} b) x^{12} c) x^{33} d) x^{13}

3. $(-2x^3)^2$ $(-2)^2 \cdot x^6 = 4x^6$ 3. D

a) $-2x^6$ b) $-4x^6$ c) $-4x^5$ d) $4x^6$

4. $4(-3x^2y^5)^3$ $4(-3)^3 x^6 y^{15} = 4(-27)x^6y^{15}$ 4. C

a) $108x^5y^8$ b) $-36x^6y^{15}$ c) $-108x^6y^{15}$ d) $-36x^5y^8$

5. Classify $7x^2y^2 - 2xy$ 5. B

a. monomial
b. binomial
c. trinomial
d. none of these

6. Determine the degree of the polynomial: $-4t + 22t^3 - 10t^2 + 6t^6$ biggest 6. A

a) 6 b) 11 c) 1 d) 12

7. Find the coefficient of the leading term: $-4t + 22t^3 - 10t^2 + 6t^6$ 7. D

a) - 4 b) 22 c) -10 d) 6

8. Find y if x = -4; $y = x^2 + 5x - 5$ $(-4)^2 + 5(-4) - 5$ $16 - 20 - 5 = -9$ 8. D

a) -41 b) 31 c) -1 d) -9

9. Combine like terms and write in standard form: $2y^2 - 6y + 3y - \frac{1}{3}y^2$ 9. C

a) $-\frac{2}{3}y^2 - 3y$ c) $\frac{5}{3}y^2 - 3y$

b) $\frac{1}{3}y^2 - 3y$ d) $-\frac{7}{3}y^2 - 3y$

Add or subtract

10. $(x^5 - 2x^4 + 3x^2 - x + 2) + (7x^4 - 2x^2 + 3x - 5)$ 10. A

a) $x^5 + 5x^4 + x^2 + 2x - 3$ b) $8x^9 - 4x^6 + 6x^3 + 5x + 2$

c) $5x^4 + x^2 + 2x - 3$ d) $x^5 + 9x^4 + 5x^2 + 2x + 7$

$x^5 + 5x^4 + x^2 + 2x - 3$

11. $(1.4x^3 - 1.4x^2 + x - 4) - (x^3 - 7x^2 - 2.3x)$ 11. B

a) $2.4x^3 + 5.6x^2 + 1.3x + 4$ b) $0.4x^3 + 5.6x^2 + 3.3x - 4$

c) $2.4x^3 - 8.4x^2 + 1.3x - 4$ d) $0.4x^3 - 8.4x^2 + 3.3x - 4$

$-x^3 + 7x^2 + 2.3x$

$1.4x^3 - x^3 - 1.4x^2 + 7x^2 + x + 2.3x - 4$

$0.4x^3 + 5.6x^2 + 3.3x - 4$

Multiply

12. $-5x^3(4x^2 + 2x - 5)$ 12. B

a) $-20x^5 + 2x - 5$ b) $-20x^5 - 10x^4 + 25x^3$

c) $-20x^6 - 10x^3 + 25$ d) $-20x^5 - 3x^4 - 10x^3$

$-20x^5 - 10x^4 + 25x^3$

13. $(3x + 7)^2 = (3x + 7)(3x + 7)$ 13. D

a) $9x^2 + 21x + 49$ b) $3x^2 + 42x + 49$

c) $9x^2 + 49$ d) $9x^2 + 42x + 49$

14. $(8a - 7)(a + 3) = 8a^2 + 24a - 7a - 21$ 14. C

a) $8a^2 - 17a - 21$ b) $8a^2 - 31a - 21$

c) $8a^2 + 17a - 21$ d) $8a^2 - 21$

15. $(5x^4 - 6y^2)(5x^4 + 6y^2)$ 15. D

a) $25x^{16} - 36y^4$ b) $10x^8 - 12y^4$

c) $10x^4 - 12y^2$ d) $25x^8 - 36y^4$

$25x^8 - 36y^4$

16. Divide: $(12x^7 - 28x^6 + 8x^3) \div (4x^3)$ 16. A

a) $3x^4 - 7x^3 + 2$ b) $3x^4 - 6x^2 + 2$

c) $3x^4 + 7x^3 + 2$ d) $3x^{10} - 7x^9 + 2x^6$

$\frac{12x^7}{4x^3} - \frac{28x^6}{4x^3} + \frac{8x^3}{4x^3} = 3x^4 - 7x^3 + 2$

17. Divide using long division: $(8x^2 + 14x - 15) \div (2x + 5)$ 17. 4x - 3

Show all work.

$$2x+5 \overline{)\,8x^2+14x-15}$$

$$4x - 3$$

$$8x^2 + 20x$$

$$-6x - 15$$

$$+6x + 15$$

$$0$$

18. $5^{-6} \cdot 5^{-4} = 5^{-10}$ 15. C

a) 600 b) 5^{24} c) $\frac{1}{5^{10}}$ d) 25^{24}

19. $(2a^{-3}b)^4$ $2^4 a^{-12} b^4 = \frac{16b^4}{a^{12}}$ 19. A

a) $\frac{16b^4}{a^{12}}$ b) $\frac{2b^4}{a^7}$ c) $\frac{8b^4}{a}$ d) $\frac{16b^4}{a}$

20. $\left(\frac{3a^{-2}b}{c^3}\right)^{-4} = \frac{3^{-4} a^8 b^{-4}}{c^{-12}}$ 20. $\frac{a^8 c^{12}}{81 b^4}$

$= \frac{a^8 c^{12}}{81 b^4}$