Analytic Geometry

Name_____ ID: 1

Extending Number System Test REVIEW

Date_____ Period____

Simplify.

1) $\sqrt{24}$ < 4 < 2 (2)

$2\sqrt{6}$

2) $-8\sqrt{18}$ < 9 < 3 (3)

$-24\sqrt{2}$

3) $7\sqrt{20}$ < 5 < 2 (2)

$14\sqrt{5}$

4) $7\sqrt{448}$ < 4 < 112 < 4 < 28 < 4 < 7 < 2 (2)

$56\sqrt{7}$

5) $2\sqrt{2} - \sqrt{2} - 2\sqrt{2} - \sqrt{3}$

$-\sqrt{2} - \sqrt{3}$

6) $\sqrt{8} + \sqrt{2}$

4 2

2 2

$2\sqrt{2} + \sqrt{2} =$ $3\sqrt{2}$

7) $2\sqrt{18} + 3\sqrt{8}$

9 2 4 2

3 3 2 2

$6\sqrt{2} + 6\sqrt{2} =$ $12\sqrt{2}$

8) $-\sqrt{27} - \sqrt{45} - \sqrt{27}$

$-2\sqrt{27} - \sqrt{45}$

9 3 9 5

3 3 3 3

$-6\sqrt{3} - 3\sqrt{5}$

9) $-4\sqrt{20} \cdot \sqrt{5}$

$-4\sqrt{100}$

-40

10) $-5\sqrt{5} \cdot 2\sqrt{5}$

$-10\sqrt{25}$

-50

11) $\sqrt{6}(-3\sqrt{2} - 4\sqrt{6})$

$-3\sqrt{12} - 4\sqrt{36}$

4 3

2 2

$-6\sqrt{3} - 24$

12) $\sqrt{6}(\sqrt{3} + \sqrt{5})$

$\sqrt{18} + \sqrt{30}$

9 2

3 3

$3\sqrt{2} + \sqrt{30}$

13) $(-5\sqrt{5}-1)(\sqrt{5}+5)$

$-5\sqrt{25}-25\sqrt{5}-\sqrt{5}-5$

$-25-26\sqrt{5}-5$

$\boxed{-30-26\sqrt{5}}$

14) $(2\sqrt{3}+2)(\sqrt{3}-2)$

$2\sqrt{9}-4\sqrt{3}+2\sqrt{3}-4$

$6-2\sqrt{3}-4$

$\boxed{2-2\sqrt{3}}$

15) $(-4\sqrt{3}-2)(5\sqrt{3}-3)$

$-20\sqrt{9}+12\sqrt{3}-10\sqrt{3}+6$

$-60+2\sqrt{3}+6$

$\boxed{-54+2\sqrt{3}}$

16) $(-1+\sqrt{3})(-5+\sqrt{3})$

Determine if the result is a rational or irrational number and explain why.

17) $-2\sqrt{45}+3\sqrt{20}$

$9\cdot5$ $\quad$ $4\cdot5$

$3\cdot3$ $\quad$ $2\cdot2$

$-6\sqrt{5}+6\sqrt{5}$

0 $\quad$ Rational

18) $\sqrt{6}(\sqrt{6}+3)$

$\sqrt{36}+3\sqrt{6}$

$6+3\sqrt{6}$ ← non perfect square

Irrational

Simplify each expression.

19) $(4-2n^4+8n)+(8n^5-2n^3+3+4n^2)+(3n^3-6n^5)$

$2n^5-2n^4+n^3+4n^2+8n+7$

20) $(5x^5+5x^4)-(-6x^4+3x^5)$

$2x^5+11x^4$

21) $(2-7m^2-7m^4-7m)+(-7m^2-5+4m-5m^4)-(4m+7m^2-1+3m^4)$

$-15m^4-21m^2-7m-2$

Find each product.

22) $5(4n - 1)$

$20n - 5$

23) $(6n + 8)(3n + 2)$

$18n^2 + 12n + 24n + 16$

$18n^2 + 36n + 16$

24) $(6a - 2)(5a - 4)$

$30a^2 - 24a - 10a + 8$

$30a^2 - 34a + 8$

25) $(7p + 7)(6p + 5)$

$42p^2 + 35p + 42p + 35$

$42p^2 + 77p + 35$

26) $(4n + 7)(8n^2 + 4n - 1)$

	$32n^3$	$16n^2$	$-4n$
$4n$			
7	$56n^2$	$28n$	-7

$32n^3 + 72n^2 + 24n - 7$

27) $(8v - 2)(7v^2 + 6v + 2)$

$7v^2 + 6v + 2$

	$56v^3$	$48v^2$	$16v$
$8v$			
-2	$-14v^2$	$-12v$	-4

$56v^3 + 34v^2 + 4v - 4$

28) $(8x - 1)(6x^2 - 3x + 6)$

$6x^2 \quad -3x \quad +6$

	$48x^3$	$-24x^2$	$48x$
$8x$			
-1	$-6x^2$	$3x$	-6

$48x^3 - 30x^2 + 51x - 6$

29) $(3x + 3)(7x^2 + 4x + 2)$

$7x^2 + 4x + 2$

	$21x^3$	$12x^2$	$6x$
$3x$			
3	$21x^2$	$12x$	6

$21x^3 + 33x^2 + 18x + 6$

30) $(-3v^2 + 8v - 6)(-7v^2 - 4v - 4)$

$-7v^2 - 4v - 4$

	$21v^4$	$12v^3$	$12v^2$
$-3v^2$			
$8v$	$-56v^3$	$-32v^2$	$-32v$
-6	$42v^2$	$24v$	24

$21v^4 - 44v^3 + 22v^2 - 8v + 24$

31) $(-5r^2 - r + 7)(8r^2 - 2r + 4)$

$8r^2 - 2r + 4$

	$-40r^4$	$10r^3$	$-20r^2$
$-5r^2$			
$-r$	$-8r^3$	$2r^2$	$-4r$
7	$56r^2$	$-14r$	28

$-40r^4 + 2r^3 + 38r^2 - 18r + 28$

32) $(-6v^2 + v - 6)(-4v^2 - 8v - 3)$

$-4v^2 - 8v - 3$

	$24v^4$	$48v^3$	$18v^2$
$-6v^2$			
v	$-4v^3$	$-8v^2$	$-3v$
-6	$24v^2$	$48v$	18

$24v^4 + 44v^3 + 34v^2 + 45v + 18$