MATH 0270/1314 COLLEGE ALGEBRA Week 5 2/19 Tuesday

REVIEW - TEST #1

$\boxed{\text{33 QUESTIONS}}$

WEDNESDAY 7:30
THURSDAY 7:45
> CHOOSE ONE TIME
(1) SCANTRON
(2) CALCULATOR
(3) NOTES

(9). Simplify

$\sqrt{63} = \sqrt{3\cdot3\cdot7} = 3\sqrt{7}$

63: 9, 7
9: 3, 3

something shows up the "index" number of times. In this case(9) invisible index is 2 ("square root").

(10) Simplify

$\sqrt[3]{56} = \sqrt[3]{2\cdot2\cdot2\cdot7} = 2\sqrt[3]{7}$

56: 2, 28
28: 2, 14
14: 2, 7

(11) Simplify

$\sqrt[9]{\underbrace{125}_{\text{"chart number"}}a^3b^6} = \sqrt[9]{5^3a^3b^6} = \sqrt[\frac{9}{3}]{5^{\frac{3}{3}}a^{\frac{3}{3}}b^{\frac{6}{3}}} = \sqrt[3]{5ab^2}$

find a common ~~de~~factor for all radicant and index, and divide through

(12) Express as a fractional exponent

$\sqrt[z]{x^y} = x^{\frac{y}{z}}$

base.

denominator on the exponent

(13) Simplify

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

← radical on denominator, simplify by multiplying its CONJUGATE on top & bottom.

$$= \frac{3}{3-\sqrt{5}} \cdot \frac{3+\sqrt{5}}{3+\sqrt{5}} = \frac{3(3+\sqrt{5})}{3\cdot 3-\sqrt{5}\cdot\sqrt{5}} = \frac{9+3\sqrt{5}}{9-5} = \boxed{\frac{9+3\sqrt{5}}{4}}$$

(14) $(8x^4)(2x^0)^3$

← "x" raised to (zero) (6^{th}) power. anything to power zero is 1.

$$= (8x^4)(2\cdot 1)^3$$

$$= 8x^4 \cdot 8$$

$$= \boxed{64x^4}$$

(15) Simplify

$$\frac{36x^3}{24x^7}$$

$$= \frac{3\cdot 12\, x^3}{2\cdot 12\, x^7}$$

$$= \frac{3}{2x^{7-3}} = \boxed{\frac{3}{2x^4}}$$

(16) $\left(\frac{x^2y^{-3}}{2}\right)^{-4}$

$$= \left(\frac{x^2}{2y^3}\right)^{-4}$$

$$= \left(\frac{2y^3}{x^2}\right)^4$$

② $$= \left(\frac{(2y^3)^4}{(x^2)^4}\right) = \frac{2^4\cdot y^{3\cdot 4}}{x^{2\cdot 4}} = \boxed{\frac{16y^{12}}{x^8}}$$

$$\left(\frac{x^2y^{-3}}{2}\right)^{-4}$$

$$= \frac{x^{2(-4)}\; y^{(-3)(-4)}}{2^{(-4)\cdot 1}}$$

$$= \frac{x^{-8}y^{12}}{2^{-4}}$$

$$= \frac{2^4y^{12}}{x^8} = \boxed{\frac{16y^{12}}{x^8}}$$

NEED TO KNOW THESE DEFINITIONS.

① opposites : two numbers that add to zero. $-7+7=0$.

② reciprocals : two numbers whose product is 1. $\frac{1}{2}\cdot\frac{2}{1}=1$.

③ conjugate. $(5+\sqrt{3})(5-\sqrt{3})$

(17) $-7^0 = \underline{-1}$

$(-7)^0 = \underline{1}$

(18) put in radical form.

$5^{2/3} = \sqrt[3]{5^2}$ ← denominator of exponent is the index of the radical form.

(19) Calculator, round to 2 decimal places.

$\sqrt[7]{144} \approx 2.03$

$\boxed{\sqrt[x]{N}}$

(20) $3^2 \cdot 3^5$

a. 9^7

b. 9^{10}

$\boxed{\text{c. } 3^7}$ ← first property of exponent
- keep the same base
- add the exponents.

d. 3^{10}

(21) $(2x^2+3x-7)+(x^2-5x-5)$

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

$= (2+1)x^2+(3-5)x-7-5$

$= 3x^2-2x-12$

(22) $(2x^2+3x-7)-(x^2-5x-5)$

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

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

$= x^2+8x-2.$

(23) $(3x-5y)(3x+5y)$

$= (3x)(3x)-(5y)(5y)$

$= 9x^2-25y^2$

(24) $5(2x+3)^2$

$= 5(2x+3)\cdot(2x+3)$

$= 5(4x^2+6x+6x+9)$

$= 5(4x^2+12x+9)$

$= 20x^2+60x+45$