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Test Review Day

Material covered is from P-2 and P-3.

Need a scantron, calculator, and Notes for the test

Test is 33 problems multiple choice

Review Questions

$$1) (-3)^4 = + 3^4 = 81$$

Notice the base is negative but the exponent is even so the answer will be positive.

$$2) -3^4 = -(3 \cdot 3 \cdot 3 \cdot 3) = -81$$

Notice the base is only 3 not -3.

$$3) 7^{-1} - 9^{-1} = \frac{1}{7} - \frac{1}{9} = \frac{(9-1) - (7-1)}{7 \cdot 9} = \frac{2}{63}$$

Get rid of negative exponents

Handy dandy method

$$4) \left(\frac{3}{5}\right)^{-2} = \left(\frac{5}{3}\right)^2 = \frac{5}{3} \cdot \frac{5}{3} = \frac{25}{9}$$

Get rid of negative exponents.

5) To 2 decimal places:

$$(4.1798)^3 = 73.01$$

$$6) (3a^3)^2 = 3^2 a^{3 \cdot 2} = 9a^6$$

2nd property
of exponents

$$7) (4x^2y^{-3})(3x^5y^2) = (4 \cdot 3 \cdot x^2 \cdot x^5 \cdot y^{-3} \cdot y^2)$$

First property
of exponents

$$= 12 \cdot x^{2+5} \cdot y^{-3+2}$$
$$= 12x^7y^{-1}$$
$$= \frac{12x^7}{y}$$

8) $5 - \sqrt{3}$ conjugate: $5 + \sqrt{3}$

remember conjugate
flips the + to a -
and vice versa.

Product of $5 - \sqrt{3}$ and its conjugate is:

$$\underline{\underline{22}}$$

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

$$5^2 - 5\sqrt{3} + 5\sqrt{3} - \sqrt{3}^2$$

$$25 - 3$$

$$22$$

9) Simplify

$$\sqrt{63} = \sqrt{7 \cdot \underbrace{3 \cdot 3}} = 3\sqrt{7}$$

pull out
pairs of things
since the index
is 2.

10) Simplify

$$\sqrt[3]{56} = \sqrt[3]{\underbrace{2 \cdot 2 \cdot 2} \cdot 7} = 2\sqrt[3]{7}$$

pull out
trios since
the index is 3

11) Simplify

$$\sqrt[9]{125 x^3 y^6} = \sqrt[9]{5^3 x^3 y^6} = \sqrt[9/3]{5^{3/3} x^{3/3} y^{6/3}}$$

Notice this
is a chart
number

Exponents all share
a common factor
of 3 so divide
by 3.

$$= \sqrt[3]{5 x y^2}$$

12) Put $\sqrt[z]{x^y}$ in exponential form

Remember with fractional exponents, they have the
form $a^{b/c} = \sqrt[c]{a^b}$

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

$$\begin{aligned}
 13) (8x^4)(2x^0)^3 &= (8x^4)(2^3x^{0 \cdot 3}) \\
 &= (8x^4)(2^3x^0) \quad \left. \begin{array}{l} \text{anything with a 0} \\ \text{exponent is 1.} \end{array} \right\} \\
 &= (8x^4)(2^3) \\
 &= (8 \cdot 8x^4) \\
 &= 64x^4
 \end{aligned}$$

$$14) \frac{36x^3}{24x^7} = \frac{\overset{3}{\cancel{6}} \cdot \overset{3}{\cancel{6}} x^3 \cdot x^{-7}}{\overset{2}{\cancel{6}} \cdot \overset{2}{\cancel{4}}} = \frac{3x^{3-7}}{2} = \frac{3x^{-4}}{2} = \frac{3}{2x^4}$$

3rd property of exponents

Factor so you can simplify the fraction

$$15) \left(\frac{x^2 y^{-3}}{2} \right)^{-4} = \frac{x^{2 \cdot -4} y^{-3 \cdot -4}}{2^{-4}} = \frac{x^{-8} y^{12}}{2^{-4}} = \frac{2^4 y^{12}}{x^0} = \frac{16y^{12}}{x^0}$$

2nd property of exponents

$$16) -7^0 = -(7^0) = -(1) = -1$$

$$(-7)^0 = 1$$

17) $5^{2/3}$ in radical form

$$5^{2/3} = \sqrt[3]{5^2}$$

remember $\sqrt[c]{a^b} = a^{b/c}$

18) Calculator

$$\sqrt[2]{144} = 2.03$$

to 2 decimal places

19) $3^2 \cdot 3^3 = 3^{2+3}$

remember
1st property of
exponents

a) 9^6

b) 9^5

c) 3^6

d) 3^5

$$20) (2x^2 + 3x - 7) + (x^2 - 5x - 5) = 2x^2 + 3x - 7 + x^2 - 5x - 5$$

combine
like
terms $\left\{ \begin{aligned} &= 2x^2 + x^2 + 3x - 5x - 7 - 5 \\ &= 3x^2 - 2x - 12 \end{aligned} \right.$

Since we are adding
polynomials the parentheses
don't matter

$$21) 5(2x+3)^2 = 5(2x+3)(2x+3) = 5(4x^2 + 6x + 6x + 9)$$

\curvearrowright
 get rid of
 the exponent

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

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

$$22) (3x - 5y)(3x + 5y) = (3x)^2 - (5y)^2$$

\curvearrowright
 They are
 conjugates

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

So their product
 is $a^2 - b^2$

$$23) (2x^2 + 3x - 7) - (x^2 - 5x - 5) = 2x^2 + 3x - 7 - x^2 + 5x + 5$$

\curvearrowright
 Since we are
 subtracting polynomials
 you change all of the
 signs in the second polynomial

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

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