

Pg. 446-447: 1-6 (a), 14-36 (e), 37-45 (o),  
53-59 (o), 61, 62

- 1 B
- 2 C
- 3 A
- 4  $2^5$
- 5  $(-5)^6$
- 6  $a^{10}$
- 14 1
- 16 5

- 18  $8^3$
- 20  $8^{14}$
- 22  $6^5$
- 24  $t^5$
- 26 4
- 28 5
- 30 2
- 32  $7^8$
- 34  $t^{30}$

- 36  $x^6$
- 37 441
- 39 576
- 41  $64d^6$
- 43  $64m^6n^6$
- 45  $-r^5s^5t^5$
- 53  $-4x^7$
- 55  $r^8s^{12}$
- 57  $18x^5$
- 59  $a^4b^4c^6$

61

$$V = 36\pi a^3$$

$$\approx 113.1a^3$$

62

$$V = 32\pi b^4$$

$$\approx 100.5b^4$$

# 8.2. Zero & Negative Exponents

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Def<sup>n</sup> For Any Nonzero # 'a'

Why?

$a^0 = 1$

\*  $a^{-n} = \frac{1}{a^n}$

$\frac{1}{a^{-n}} = a^n$

$a^0 \cdot a^n = a^{0+n} = a^n$

So...  $a^0$  Must Be 1

$a^n \cdot a^{-n} = a^{n-n} = a^0 = 1$

These are Reciprocals  
Two # Multiplied together = 1

$a^n \cdot a^{-n} = \frac{a^n}{1} \cdot \frac{1}{a^n} = \frac{a^n}{a^n} = \underline{\underline{1}}$

ex1)  $5^0 = 1$

ex2)  $0^0 = \text{undefined}$

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ERR:DOMAIN  
1:Quit  
2:Goto
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ex3)  $(-2)^0 = 1$

ex4)  $(\frac{3}{-4})^0 = 1$

ex5)  $(\text{pineapple})^0 = 1$

ex 6  $3^{-2} = \frac{1}{3^2} = \underline{\underline{\frac{1}{9}}}$

ex 7  $\frac{1}{(-3)^{-4}} = (-3)^4 = (-3)(-3)(-3)(-3) = \underline{\underline{81}}$

ex 8  $\frac{1}{2^{-3}} = 2^3 = \underline{\underline{8}}$

ex 9  $-3^{-2} = -\frac{1}{3^2} = \underline{\underline{-\frac{1}{9}}}$

ex10)  $6^{-4} \cdot 6^4 = 6^{-4+4} = 6^0 = \underline{\underline{1}}$

ex11)  $(2^{-3})^{-2} = 2^{-3 \cdot -2} = 2^6 = \underline{\underline{64}}$

ex12)  $(-3 \cdot 2)^{-2} = (-3)^{-2} \cdot 2^{-2}$   
 $= \frac{1}{(-3)^2} \cdot \frac{1}{2^2} = \frac{1}{9} \cdot \frac{1}{4} = \underline{\underline{\frac{1}{36}}}$

$(-3 \cdot 2)^{-2} \downarrow = \frac{1}{(-3 \cdot 2)^2} = \frac{1}{(-3)^2 \cdot 2^2}$



Simplify: "No Negative Exponents"

ex13  $2x^{-2}y^{-3} = 2 \frac{1}{x^2} \cdot \frac{1}{y^3} = \frac{2}{x^2y^3}$

ex14  $\frac{c^{-2}}{d^{-3}} = \frac{d^3}{c^2}$

ex15  $(5a)^{-2} = \frac{1}{(5a)^2} = \frac{1}{5^2 \cdot a^2} = \frac{1}{25a^2}$

$(5a)^{-2} = 5^{-2} \cdot a^{-2}$   
 $= \frac{1}{5^2} \cdot \frac{1}{a^2} = \frac{1}{25a^2}$

O.T.L.

① Pg 452-453

21-61 (odd)

Show All work!