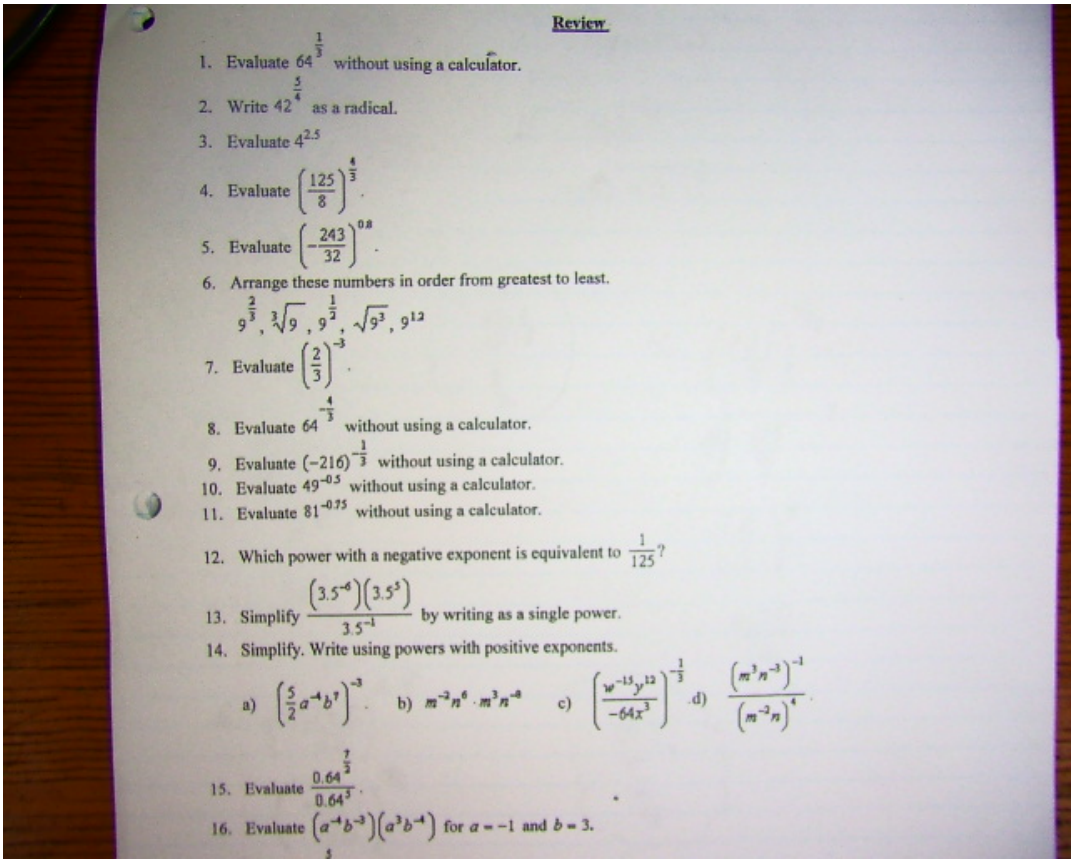
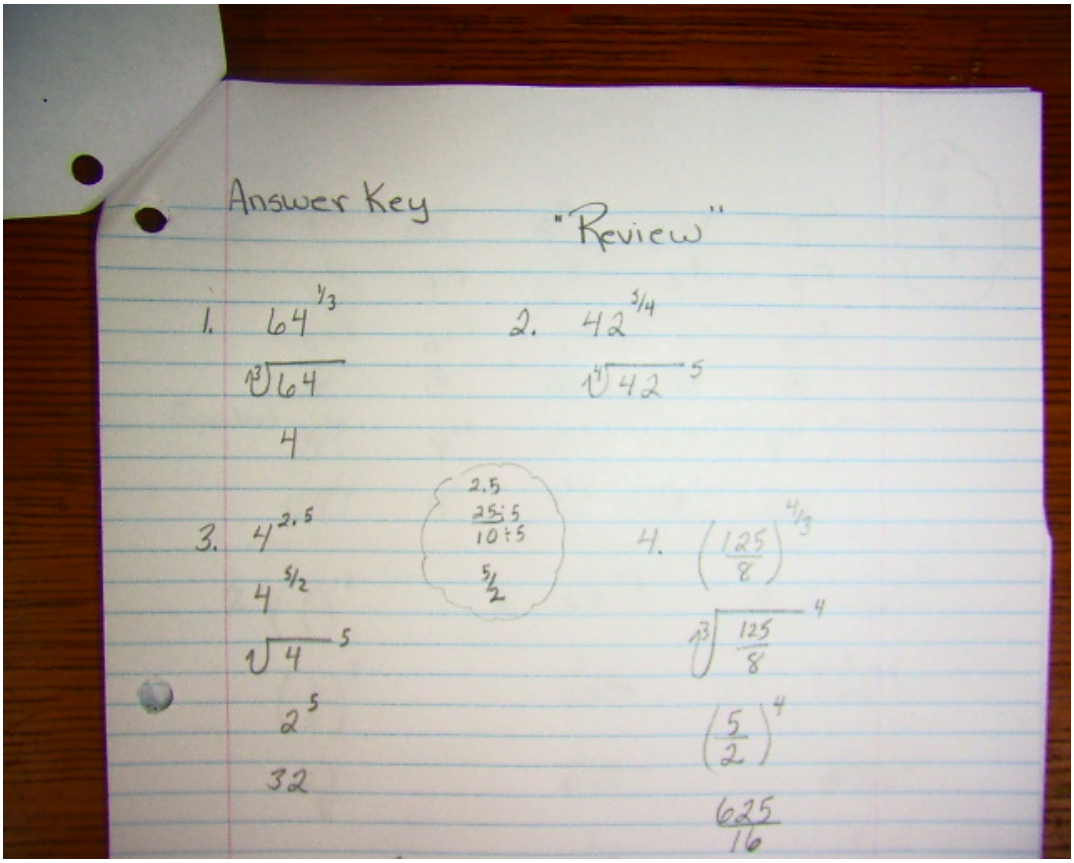
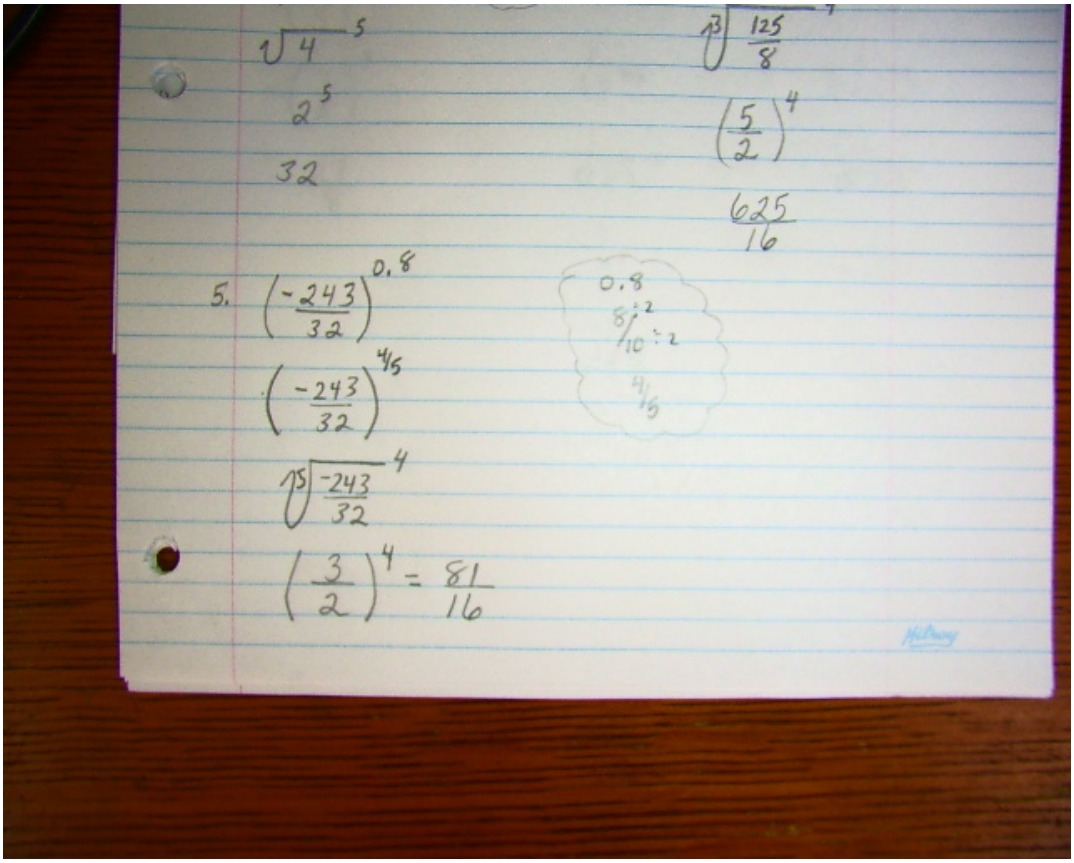
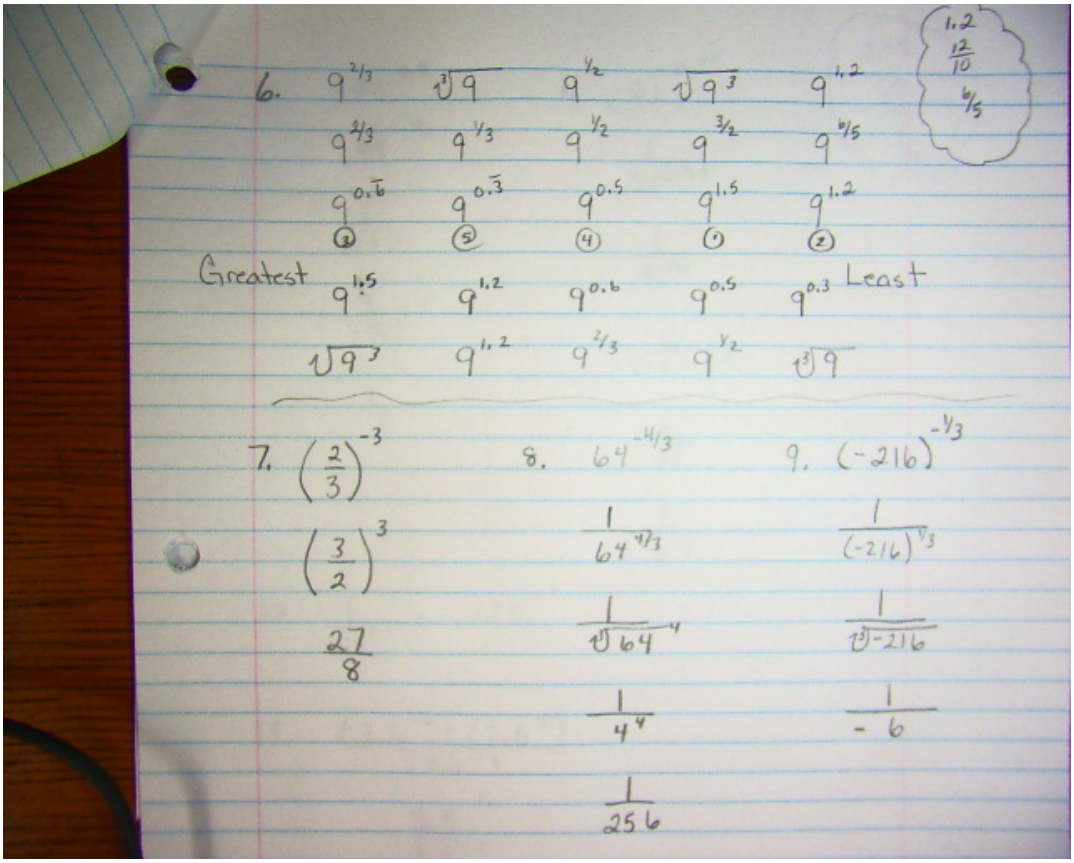


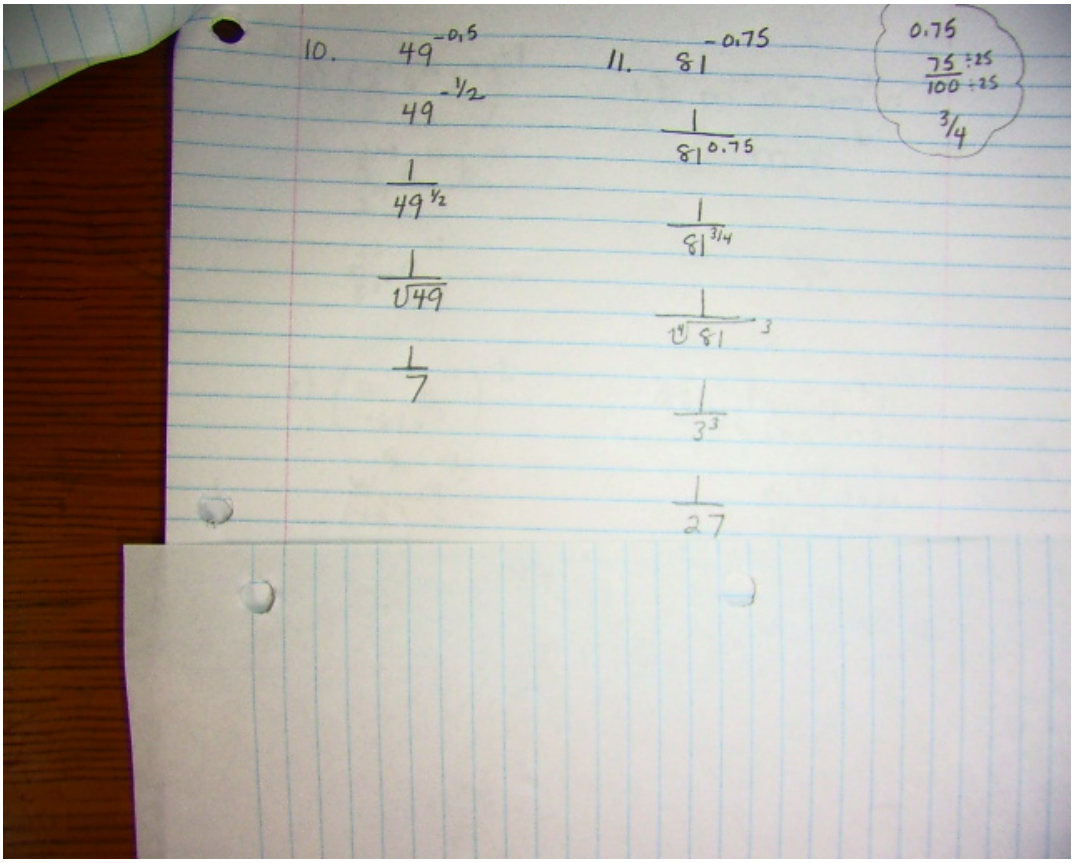
Review

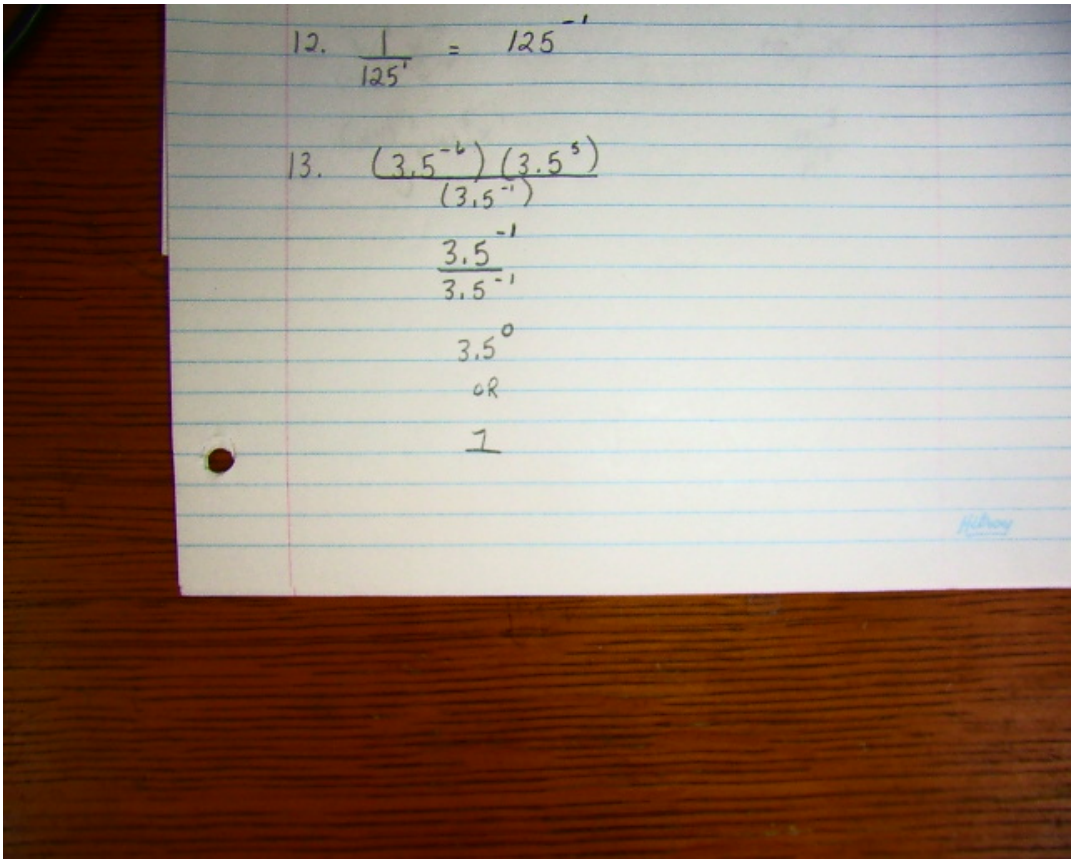
1. Evaluate $64^{\frac{1}{3}}$ without using a calculator.
2. Write $42^{\frac{5}{4}}$ as a radical.
3. Evaluate $4^{2.5}$
4. Evaluate $\left(\frac{125}{8}\right)^{\frac{4}{3}}$.
5. Evaluate $\left(-\frac{243}{32}\right)^{0.8}$.
6. Arrange these numbers in order from greatest to least.
   $9^{\frac{2}{3}}, \sqrt[3]{9}, 9^{\frac{1}{2}}, \sqrt{9^3}, 9^{1.2}$
7. Evaluate $\left(\frac{2}{3}\right)^{-3}$.
8. Evaluate $64^{-\frac{4}{3}}$ without using a calculator.
9. Evaluate $(-216)^{-\frac{1}{3}}$ without using a calculator.
10. Evaluate $49^{-0.5}$ without using a calculator.
11. Evaluate $81^{-0.75}$ without using a calculator.
12. Which power with a negative exponent is equivalent to $\frac{1}{125}$?
13. Simplify $\frac{\left(3.5^{-6}\right)\left(3.5^{5}\right)}{3.5^{-1}}$ by writing as a single power.
14. Simplify. Write using powers with positive exponents.
    a) $\left(\frac{5}{2}a^{-4}b^{7}\right)^{-3}$ b) $m^{-2}n^{6}\cdot m^{3}n^{-8}$ c) $\left(\frac{w^{-15}y^{12}}{-64x^{3}}\right)^{-\frac{1}{3}}$ d) $\frac{\left(m^{3}n^{-3}\right)^{-1}}{\left(m^{-2}n\right)^{4}}$
15. Evaluate $\frac{0.64^{\frac{7}{3}}}{0.64^{3}}$.
16. Evaluate $\left(a^{-4}b^{-3}\right)\left(a^{3}b^{-4}\right)$ for $a=-1$ and $b=3$.

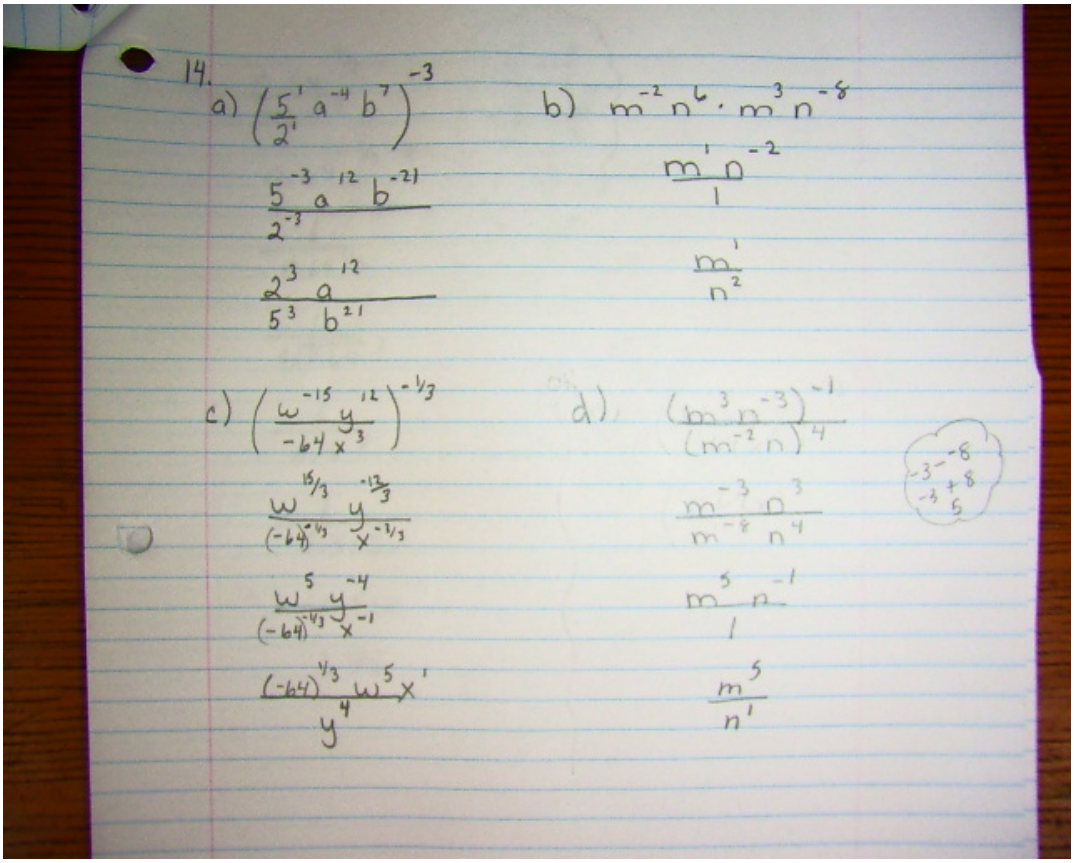

Answer Key
"Review"
1. $64^{1/3}$
$\sqrt[3]{64}$
4
2. $42^{5/4}$
$\sqrt[4]{42^5}$
3. $4^{2.5}$
$4^{5/2}$
$\sqrt{4^5}$
2^5
32
2.5
25÷5
10÷5
5/2
4. $\left(\frac{125}{8}\right)^{4/3}$
$\sqrt[3]{\left(\frac{125}{8}\right)^4}$
$\left(\frac{5}{2}\right)^4$
$\frac{625}{16}$

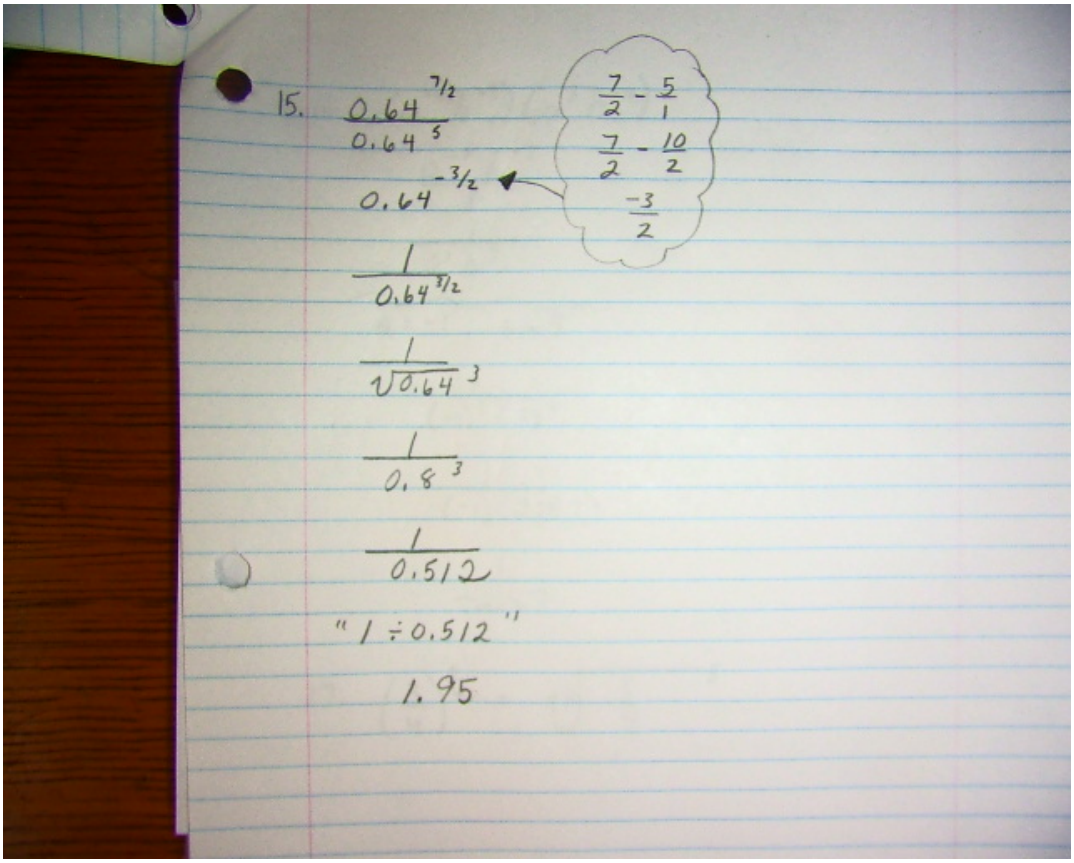

$\sqrt[5]{4}$
2^5
32
$\sqrt[4]{\frac{125}{8}}$
$\left(\frac{5}{2}\right)^4$
$\frac{625}{16}$
5. $\left(\frac{-243}{32}\right)^{0.8}$
$\left(\frac{-243}{32}\right)^{4/5}$
$\sqrt[4]{\frac{-243}{32}}$
$\left(\frac{3}{2}\right)^4 = \frac{81}{16}$
0.8
$\frac{8}{10} \div 2$
$\frac{4}{5}$

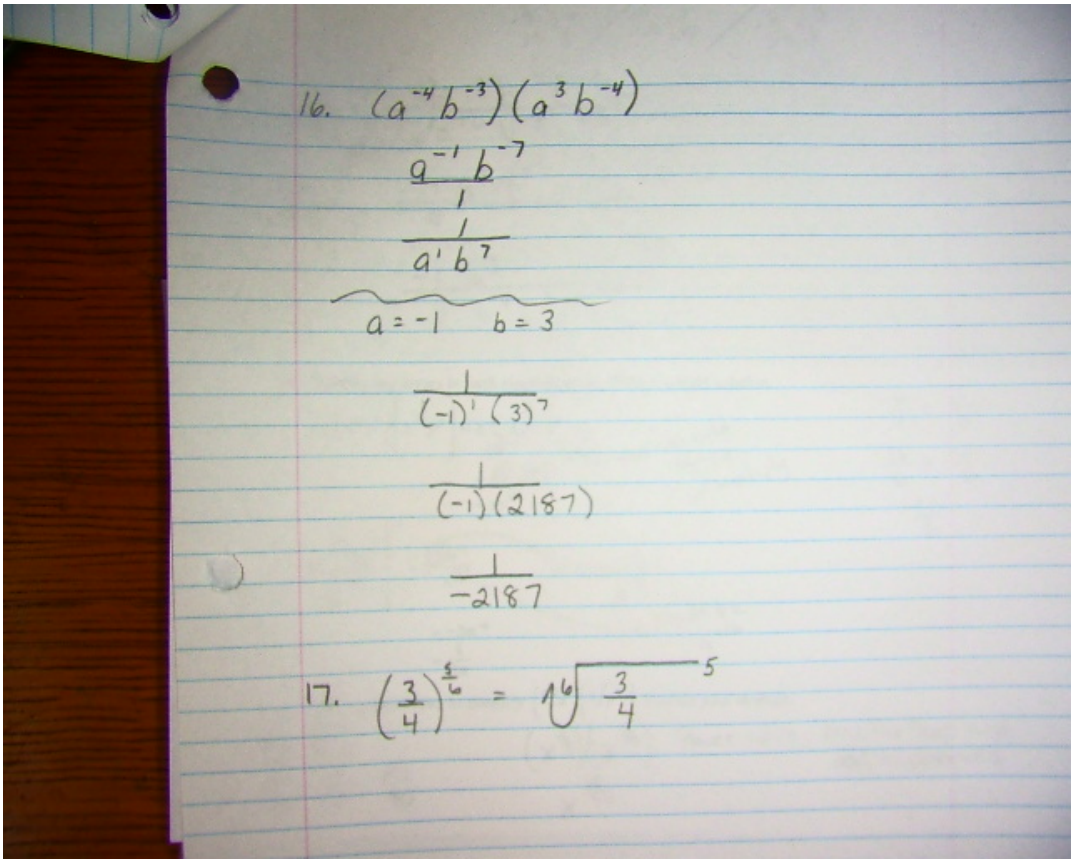

6.
$9^{2/3}$ $\sqrt[3]{9}$ $9^{1/2}$ $\sqrt{9^3}$ $9^{1.2}$
$9^{4/3}$ $9^{1/3}$ $9^{1/2}$ $9^{3/2}$ $9^{6/5}$
$9^{0.\overline{6}}$ $9^{0.\overline{3}}$ $9^{0.5}$ $9^{1.5}$ $9^{1.2}$
② ⑤ ④ ① ③
Greatest
$9^{1.5}$ $9^{1.2}$ $9^{0.6}$ $9^{0.5}$ $9^{0.3}$ Least
$\sqrt{9^3}$ $9^{1.2}$ $9^{2/3}$ $9^{1/2}$ $\sqrt[3]{9}$
1.2
$\frac{12}{10}$
$\frac{6}{5}$
7. $\left(\frac{2}{3}\right)^{-3}$
$\left(\frac{3}{2}\right)^{3}$
$\frac{27}{8}$
8. $64^{-4/3}$
$\frac{1}{64^{4/3}}$
$\frac{1}{\sqrt[3]{64^4}}$
$\frac{1}{4^4}$
$\frac{1}{256}$
9. $(-216)^{-1/3}$
$\frac{1}{(-216)^{1/3}}$
$\frac{1}{\sqrt[3]{-216}}$
$\frac{1}{-6}$

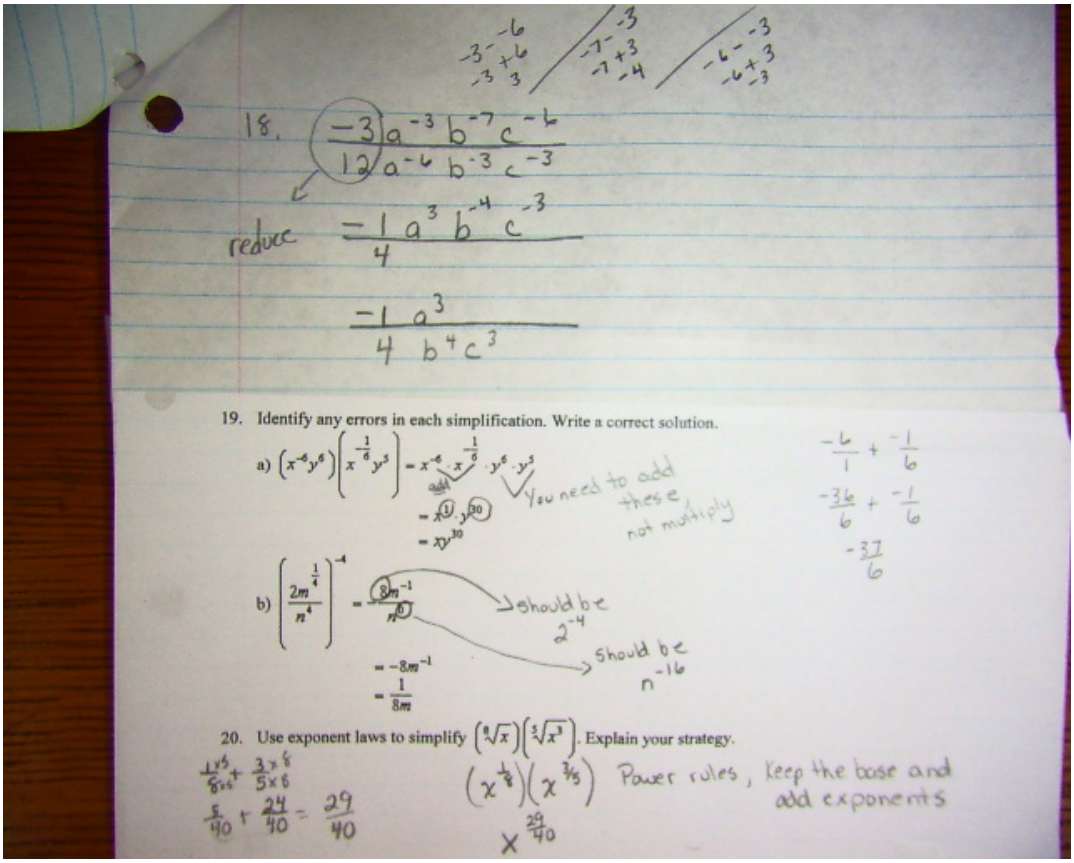

10. $49^{-0.5}$
$49^{-1/2}$
$\frac{1}{49^{1/2}}$
$\frac{1}{\sqrt{49}}$
$\frac{1}{7}$
11. $81^{-0.75}$
$\frac{1}{81^{0.75}}$
$\frac{1}{81^{3/4}}$
$\frac{1}{\sqrt[4]{81}^3}$
$\frac{1}{3^3}$
$\frac{1}{27}$
0.75
$\frac{75 \div 25}{100 \div 25}$
3/4


12. $\frac{1}{125^{1}} = 125^{-1}$
13. $\frac{(3.5^{-6})(3.5^{5})}{(3.5^{-1})}$
$\frac{3.5^{-1}}{3.5^{-1}}$
3.5^{0}
OR
1


14.
a) $\left(\frac{5^1 a^{-4} b^7}{2^1}\right)^{-3}$
$\frac{5^{-3} a^{12} b^{-21}}{2^{-3}}$
$\frac{2^3 a^{12}}{5^3 b^{21}}$
b) $m^{-2} n^6 \cdot m^3 n^{-8}$
$\frac{m^1 n^{-2}}{1}$
$\frac{m^1}{n^2}$
c) $\left(\frac{w^{-15} y^{12}}{-64 x^3}\right)^{-1/3}$
$\frac{w^{15/3} y^{-12/3}}{(-64)^{-1/3} x^{-3/3}}$
$\frac{w^5 y^{-4}}{(-64)^{-1/3} x^{-1}}$
$\frac{(-64)^{1/3} w^5 x^1}{y^4}$
d) $\frac{(m^3 n^{-3})^{-1}}{(m^{-2} n)^4}$
$\frac{m^{-3} n^3}{m^{-8} n^4}$
$\frac{m^5 n^{-1}}{1}$
$\frac{m^5}{n^1}$
$-3 - -8$
$-3 + 8$
5


15. $\frac{0.64^{7/2}}{0.64^{5}}$
$0.64^{-3/2}$
$\frac{1}{0.64^{3/2}}$
$\frac{1}{\sqrt{0.64}^{3}}$
$\frac{1}{0.8^{3}}$
$\frac{1}{0.512}$
"1 ÷ 0.512"
1.95
$\frac{7}{2} - \frac{5}{1}$
$\frac{7}{2} - \frac{10}{2}$
$\frac{-3}{2}$


16. $(a^{-4}b^{-3})(a^{3}b^{-4})$
$a^{-1}b^{-7}$
$\frac{1}{a^{1}b^{7}}$
$a=-1 \quad b=3$
$\frac{1}{(-1)^{1}(3)^{7}}$
$\frac{1}{(-1)(2187)}$
$\frac{1}{-2187}$
17. $\left(\frac{3}{4}\right)^{\frac{5}{6}} = \sqrt[6]{\frac{3}{4}^{5}}$



18. $\frac{-3a^{-3}b^{-7}c^{-6}}{12a^{-6}b^{-3}c^{-3}}$

reduce $\frac{-1a^{3}b^{-4}c^{-3}}{4}$

$\frac{-1a^{3}}{4b^{4}c^{3}}$

19. Identify any errors in each simplification. Write a correct solution.

a) $\left(x^{-6}y^{6}\right)\left(x^{-\frac{1}{6}}y^{5}\right) = x^{-6}\cdot x^{-\frac{1}{6}}\cdot y^{6}\cdot y^{5}$ (add)

$= x^{-1}y^{30}$

$= xy^{30}$

You need to add these, not multiply

$-\frac{6}{1}+\frac{-1}{6}$

$-\frac{36}{6}+\frac{-1}{6}$

$-\frac{37}{6}$

b) $\left(\frac{2m^{\frac{1}{4}}}{n^{4}}\right)^{-4} = \frac{8m^{-1}}{n^{0}}$

should be 2^{-4}

should be n^{-16}

$= -8m^{-1}$

$= -\frac{1}{8m}$

20. Use exponent laws to simplify $\left(\sqrt[8]{x}\right)\left(\sqrt[5]{x^{3}}\right)$. Explain your strategy.

$\frac{1\times5}{8\times5}+\frac{3\times8}{5\times8}$

$\frac{5}{40}+\frac{24}{40}=\frac{29}{40}$

$\left(x^{\frac{1}{8}}\right)\left(x^{\frac{3}{5}}\right)$ Power rules, keep the base and add exponents

$x^{\frac{29}{40}}$