

Part 1

- 1) Find the exact, simplified value of each expression **without a calculator**. If you are stuck, try converting between radical and rational exponential notation first, and then simplify.

Sometimes, simplifying the exponent (or changing a decimal to a fraction) is very helpful.

a. $125^{1/3} =$

b. $64^{-1/2} =$

c. $64^{1/6} =$

d. $81^{1/2} =$

e. $32^{-1/5} =$

f. $81^{-1/4} =$

g. $4^{3/2} =$

h. $(-64)^{2/3} =$

i. $(-8)^{-5/3} =$

j. $9^{-3/2} =$

k. $\left(\frac{9}{4}\right)^{3/2} =$

l. $16^{-1.5} =$

m. $(\sqrt[3]{-27})^2 =$

n. $\sqrt[3]{125^2} =$

o. $(\sqrt[3]{4})^6 =$

p. $(\sqrt{5})^2 =$

q. $(\sqrt[4]{2})^4 =$

r. $(\sqrt[5]{3})^5 =$

- 2) Simplify each expression completely.

a. $3^{5/3} \times 3^{1/3} =$

b. $(5^{2/3})^{1/2} =$

c. $\frac{1}{36^{-1/2}} =$

d. $\left(\frac{5^2}{8^2}\right)^{-1/2} =$

e. $\frac{125^{1/9}}{5^{1/4}} =$

f. $(10^{3/4} \times 4^{3/4})^{-4} =$