

## Homework #9-1: Rational Exponents

### 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.  $125^{\frac{1}{3}} =$

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