1. Simplify the following expressions completely. Please show all of your work!

a. $4\sqrt{98y^4}$

b. $\sqrt[3]{64x^6y^3}$

c. $\sqrt[4]{81m^4n^5}$

d. $\sqrt{32}$

e. $5\sqrt{50}$

f. $\sqrt[3]{16}$

2. Use the product property and quotient property to simplify the following expressions completely.

a. $\sqrt{3x^2z^3} \cdot \sqrt{15x^2z}$

b. $\sqrt{26} \cdot \sqrt{39} \cdot \sqrt{14}$

c. $(7\sqrt{6})(-3\sqrt{10})$

d. $(4\sqrt{18})(2\sqrt{14})$

e. $\sqrt{\frac{8}{9}}$

f. $\sqrt[3]{\frac{5}{27a^{10}}}$