

1. Multiply:

a)  $\sqrt[4]{6x^2} \cdot \sqrt[4]{3x} =$

b)  $\sqrt[6]{x-5} \cdot \sqrt[6]{(x-5)^4} =$

2. Simplify by factoring:

a)  $\sqrt{40x} =$

b)  $\sqrt[3]{-250x^3} =$

3. Express  $f(x)$  in simplest form (assume that  $x$  can be any real number).

a)  $f(x) = \sqrt[3]{48(x-2)^3}$

b)  $f(x) = \sqrt{5x^2 - 10x + 5}$

4. Simplify (assume that all variables are positive real numbers).

a)  $\sqrt{x^6y^7} =$

b)  $\sqrt[3]{27x^3y^{17}z^2} =$

c)  $\sqrt[3]{32x^9y^{17}} =$

$$d) \sqrt[4]{96x^{11}} =$$

5. Multiply and simplify (assume that all variables are positive real numbers):

$$a) \sqrt{3} \cdot \sqrt{6} =$$

$$b) \sqrt{5xy} \cdot \sqrt{10xy^2} =$$

$$c) \sqrt[4]{4x^2y^3z^3} \cdot \sqrt[4]{8x^4yz^6} =$$

$$d) \sqrt[3]{(x-5)} \cdot \sqrt[3]{(x-5)^7} =$$

$$e) (5a^2b^4\sqrt[4]{8a^2b})(4ab^4\sqrt[4]{4a^3b^2}) =$$

Q: There is a word in the English language in which the first two letters signify a male, the first three letters signify a female, the first four signify a great man, and the whole word, a great woman. What is the word?