

## Section 4.7 Radical Equations and Inequalities

Solving radical equations requires that first the radical be isolated.

Afterwards, raise both sides by an exponent that will negate the radical and solve for the value of the variables.

Some of the resulting values lead to extraneous solutions which requires that all values be checked for correctness.

$$\text{Ex. } 4 = \sqrt[3]{x+2} + 8$$

$$-8$$

$$-4 = \sqrt[3]{x+2}$$

$$(-4)^3 = (\sqrt[3]{x+2})^3$$

$$-64 = x + 2$$

$$-2$$

$$-66 = x$$

check:

$$4 = \sqrt[3]{-66+2} + 8$$

$$4 = \sqrt[3]{-64} + 8$$

$$\text{Ex. } \sqrt{x+16} = \sqrt{x} + 4$$

$$(\sqrt{x+16})^2 = (\sqrt{x} + 4)^2$$

$$x + 16 = x + 8\sqrt{x} + 16$$

$$x + 16 - x - 16 = 8\sqrt{x}$$

$$0 = 8\sqrt{x}$$

$$0 = x$$

check

$$\sqrt{0+16} = \sqrt{0} + 4$$

$$\sqrt{16} = 0 + 4$$

$$4 = 4 \checkmark$$

