

# Coreq Support for Section 5.1a

## Topic 1: Properties of Exponents (Video: Exponents)

For Chapter 5, it will be important to know the properties of exponents and to be able to rewrite and evaluate expressions that contain exponents. Refer to the Coreq Support for Section 1.1 notes for a summary of the properties of exponents.

## Topic 2: Evaluating Expressions with Negative Exponents (Video: Negative Exponents)

If  $a$  is a real number other than 0 and  $n$  is an integer, then

$$a^{-n} = \frac{1}{a^n}.$$

### Topic 3: Rational Exponents

(Video: Rational Exponents 0:00 – 16:30)

**Definition of  $a^{\frac{1}{n}}$ :** If  $n$  is an integer greater than 1 and  $\sqrt[n]{a}$  is a real number, then  $a^{\frac{1}{n}} = \sqrt[n]{a}$ .

**Definition of  $a^{\frac{m}{n}}$ :**

If  $m$  and  $n$  are integers greater than 1 with  $\frac{m}{n}$  in lowest terms, then  $a^{\frac{m}{n}} = \sqrt[n]{a^m} = (\sqrt[n]{a})^m$  as long as  $\sqrt[n]{a}$  is a real number.

### Topic 4: Rewriting an Expression in the Form $b^u$

When solving an equation where the variable is an exponent, it is sometimes useful to rewrite one or both sides of the equation using a different base. For example,  $8^x$  can be rewritten as  $2^{3x}$ .

## Topic 5: Using Transformations to Graph Functions