SOL Review Topic 3: Simplifying Radicals and Complex Numbers

Simplifying Radicals

1) 2) 3) 4) 

Operations with Radicals

5) 6)  7) 

8)  9)  10) 

Rational Exponents

*Express the following in exponential form:*

11) 12)  13)  14) 

*Express the following in radical form:*

15)  17) 

Powers of *i*

18)    

    

19)  20) 

Imaginary Numbers

21) 22) 23) 

Operations with Complex Numbers

24)  25)

Solving Radical and Rational Exponent Equations

26)  27)  28) 

Mixed Practice with Radicals and Complex Numbers

**SIMPLIFY OR SOLVE:**

29)  30) 31) 

32)  33)  34)

35)  36)  37) 

EXTRA NOTES AND EXAMPLES:

Simplifying Radicals

To simplify, use  or break out into prime factors looking for the same repeated factors (2 or 3 or 4 of a kind—depending on the index).

Ex)

Simplifying Radical Expressions:

Ex)

Multiplying: Simplify each first, then multiply.

Ex)

Dividing Radicals: Answers cannot have radicals in the denominator. We need to *rationalize* the answer by multiplying the top and bottom by a radical that will ‘lift’ the root sign. If the denominator is a *binomial* you must multiply top/bottom by its *conjugate.*

Ex)

Radicals or *i*’s in the denominator: Multiply the numerator and the denominator by the conjugate.

Ex)

Adding/Subtracting Radicals: Simplify then combine like terms.

Ex)

Rational Exponents: Divide the exponents by the index: 

Examples of rewriting:

Ex)

Complex Numbers 

*Remember*: If there is a negative (-) under an even root, pull it out as in *i.*

Ex)Cycle of powers of *i: *

 \*\***To use the calc.** *i* can be found by hitting 2nd and ‘.’ Use the *i* key just like you would *x* when multiplying and dividing complex numbers. The calculator will return the answer using *i*. If you want a fractional answer, hit MATH, FRAC.

EXTRA PRACTICE E:







EXTRA PRACTICE F:

