- For **problem 1**,

Simplify each radical, and then combine like terms.

<https://www.youtube.com/watch?v=VWlFMfPVmkU>

- For **problem 3**, multiply both parts by the conjugate of the denominator , to undo the radical in the denominator.

<https://www.youtube.com/watch?v=RecR9gV6C1I>

- For **problems 5 and 6**, remember the value underneath the radical must be positive, so set that greater than or equal to zero to find all possible x-values (the domain). Then use this domain to determine the range of possible y-values. You can also consider a sketch of the graph of each function, according to the transformation rules and then think of domain and range in terms of left/right and up/down.

<https://www.youtube.com/watch?v=4h54s7BBPpA>

<https://www.youtube.com/watch?v=bowcRv8YOcA>

For **problems 7-10**, once you have a radical isolated, you can square both sides to undo the radical and solve as you normally would.

<https://www.youtube.com/watch?v=pFFoAGIEyJc>

For **problem 12**, use “FOIL.” Remember you can multiply what is outside the radical together and what is inside the radical together, and be sure to simplify where necessary.

<https://www.youtube.com/watch?v=FUuxgnzQdCo>

For problems 13 and 14, use the transformation rules to graph. Remember, domain is x-values from left to right and range is y-values from down to up.

Remember if A is negative, the graph reflects over the x-axis, if B is negative it reflects over the y-axis. If any number is added inside the grouping, move left that amount of spaces, and if subtracted, move right. If any number is added outside of the grouping, move up that amount of spaces, and if it is subtracted, move down.

<https://www.youtube.com/watch?v=cIyy2oVAA6E> (first 6 minutes)

<https://www.youtube.com/watch?v=-mm38FGG1uE>

For **problems 15-18**, remember the denominator cannot equal zero. Also factor to see if any factors will divide out to 1 in order to simplify.

<https://www.youtube.com/watch?v=7Uos1ED3KHI>

<https://www.youtube.com/watch?v=K16hsp3-23Y>

For **problems 19 and 20**, multiply both parts of the fraction by the conjugate of the denominator (ex the conjugate of -1 – 2i is -1 + 2i). Remember that i2 simplifies to -1. Be sure to combine all like terms, and simplify your final expression.

<https://www.youtube.com/watch?v=Z8j5RDOibV4>

For **problems 21 and 22**, substitute the value in for the variable, being sure to keep track of parentheses and signs. You can also use the remainder theorem, by using synthetic division to divide the polynomial by the variable. The remainder should be the same as the output value of inputting the given value for the variable.

<https://www.youtube.com/watch?v=65qZocJjJfw>

<https://www.youtube.com/watch?v=MwG6QD352yc>