

Name: _____ Date: _____ Band: _____
Algebra 2

Radical and Rational Functions Performance Task

Instructions: Choose **one** performance task. Write all your work on a separate clean piece of paper and attach it to this page.

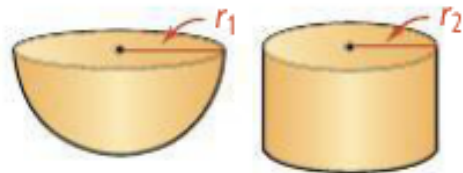
Big Idea: Solving Equations and Inequalities

Solving an equation is the process of rewriting the equation to make what it says about its variables as simple as possible.

Performance Task 1

An environmental equipment supplier sells hemispherical holding ponds for treatment of chemical waste. The volume of a pond is $V_1 = \frac{1}{2} \left(\frac{4}{3} \pi r_1^3 \right)$, where r_1 is the radius in feet. The supplier also sells cylindrical collecting tanks. A collecting tank fills completely and then drains completely to fill the empty pond. The volume of the tank is $V_2 = 12\pi r_2^2$, where r_2 is the radius of the tank.

- Since $V_1 = V_2$, write an equation that shows r_1 as a function of r_2 . Write an equation that shows r_2 as a function of r_1 .
- You want to double the radius of the pond. How will the radius of the tank change?



Big Idea: Function

You can represent functions in a variety of ways (such as graphs, tables, equations, or words). Each representation is particularly useful in certain situations.

Performance Task 2

Study the function $f(x) = \frac{x^2+x-6}{x^2-5x+6}$.

- Describe the points of discontinuity for the function. Explain your answers.
- How can you use the equation $x + 3 = x - 3 + 6$ to create an equivalent form of f to show how the graph of f is related to the graph of $y = \frac{1}{x}$? Describe the relationship.

Big Idea: Equivalence

You can use symbols to represent an equation in an unlimited number of ways, where all equations have the same solution.

Performance Task 3

Delia and Kari have the same size bathroom. It takes Delia 3 hours longer to finish tiling her bathroom than Kari. If they work together it takes them 2 hours to lay the tillers per bathroom. How long does it take Kari to lay the tiles in her bathroom by herself? How long does it take Delia to finish her bathroom if she works alone? Show your work.

Performance Task Assessment: Analytic Holistic Scoring

Developing Autonomy—The student

3	Persevered to complete the problem without help
2	Completed most of the problem without help
1	Needed key hints to complete the problem
0	Needed extensive guidance to work the problem

The Solution Process—The student's work showed

3	A complete and appropriate solution process
2	An appropriate solution process that is almost complete
1	An appropriate process that is partially complete
0	An inappropriate process or no evidence of a process

The Conclusion/Answer—The student's answer is an

3	Accurate conclusion, supported by valid evidence and reasons, appropriate to this problem and context
2	Inaccurate but logical conclusion, supported by evidence and reasoning but incorrect due to a minor factual error (in details of problem, in computation, recall a formula, etc.) or minor mistake in reasoning
1	Inaccurate but logical conclusion that overlooks, or gets wrong significant facts (about the problem, the rule, computation, etc.)
0	Inappropriate conclusion: not supported by facts and logic, or there is no conclusion

Teacher Comments: