1.1 Modeling & Equation Solving

Review Target: Find extrema, zeroes, in odd or even functions

Review of Prior Concepts

Solve the equation $x + 1 = 2\sqrt{x + 4}$ algebraically.

Show your work. **Explain your steps.**

More Practice

Solving Radical Equations

http://www.regentsprep.org/regents/math/algtrig/ate10/radlesson.htm

http://www.purplemath.com/modules/solverad2.htm

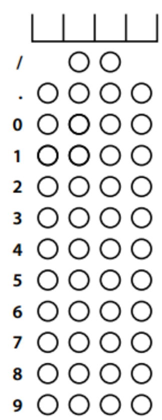
https://www.youtube.com/watch?v=JBCsfUaXTNs

SAT Connection

Passport to Advanced Math

7. Solve an equation in one variable that contains radicals.

Example: If $a = 5\sqrt{2}$ and $2a = \sqrt{2x}$, what is the value of x ?



NOTE: You may start your answers in any column, space permitting. Columns you don't need to use should be left blank.

Solution

Fundamental Connection (p.70)

If a is a real number that solves the equation $f(x) = 0$, then these 3 statements are equivalent.

1.

2.

3.

Example 1: Find the zero(s) of $f(x) = x + 1 - 2\sqrt{x+4}$ graphically.

Example 2: Solve the equation $x + 1 = 2\sqrt{x+4}$ by finding the *x*-intercepts graphically.

Now you try…& verify with your group members. (round to nearest thousandths – 3 decimal places)

Find the roots of the equation $f(x) = \lvert 2x - 1\rvert - 5$ graphically.	Find the zero(s) of the equation $g(x) = x + 2 - 2\sqrt{x+3}$ graphically.
Solve the equation $\sqrt{x+7} = -x^2 + 5$ graphically.	Find the *x*-intercepts of the equation $\lvert x + 5\rvert = \lvert x - 3\rvert$ graphically.

More Practice

Zeros, Roots, and X-Intercepts

http://www.themathpage.com/aprecalc/roots-zeros-polynomial.htm

https://www.youtube.com/watch?v=yL-H9Sl8BVI

Homework Assignment

p.78 #39,41,43,47,48

SAT Connection

Solution

The correct answer is 100. Since $a = 5\sqrt{2}$, one can substitute $5\sqrt{2}$ for a in $2a = \sqrt{2}x$, giving $10\sqrt{2} = \sqrt{2}x$. Squaring each side of $10\sqrt{2} = \sqrt{2}x$ gives $(10\sqrt{2})^2 = (\sqrt{2}x)^2$, which simplifies to $(10)^2(\sqrt{2})^2 = (\sqrt{2}x)^2$, or $200 = 2x$. This gives $x = 100$. Checking $x = 100$ in the original equation gives $2(5\sqrt{2}) = \sqrt{(2)(100)}$, which is true since $2(5\sqrt{2}) = 10\sqrt{2}$ and $\sqrt{(2)(100)} = (\sqrt{2})(\sqrt{100}) = 10\sqrt{2}$.