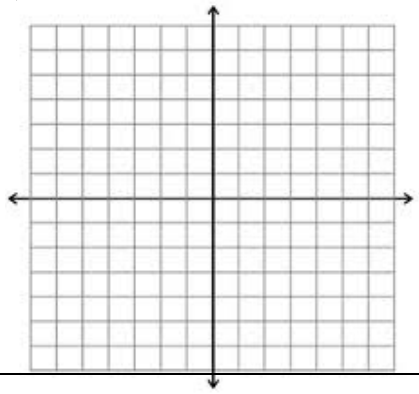
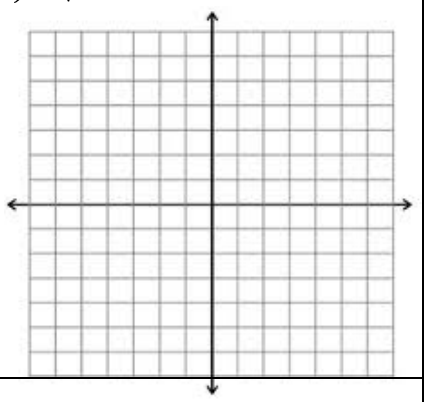
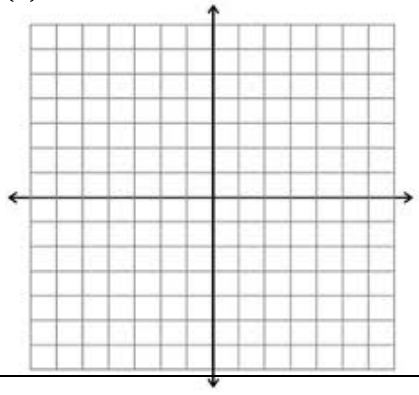
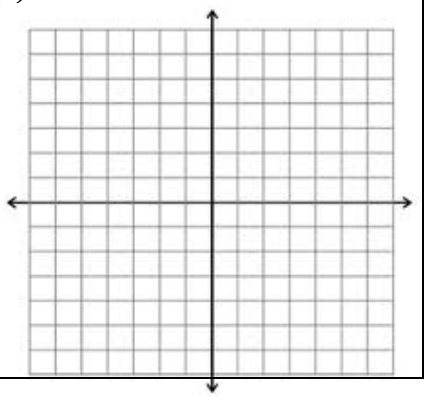
Common Core Math II **Unit 6: Radical and Exponents Review** Name: _____

Answer each question. Show all work.

1. If the world population is about 6 billion people now and if the population grows continuously at an annual rate of 1.7%, what will the population be in 10 years?	2. Find the amount of money you will have after 10 years if $15,000 is invested in accounts paying 6% interest compounded: a. Annually b. Quarterly c. Monthly d. Daily e. Continuously
3. In 1996 the population of Russia was 148 million and the population of Nigeria was 104 million. If the populations of Russia and Nigeria grow continuously at annual rates of -0.62% and 3.0%, respectively, when will Nigeria have a greater population than Russia?	4. At what annual rate compounded continuously will $1,000 have to be invested to amount to $2,500 in 10 years?
5. A promissory note will pay $30,000 at maturity 10 years from now. How much should you be willing to pay for the note now if the note gains value at a rate of 9% compounded continuously?	6. As long as a plant or animal is alive, carbon 14 is maintained in a constant amount in its tissues. Once dead, however, the plant or animal ceases taking in carbon, and carbon 14 diminishes by radioactive decay. Estimate the age of a skull uncovered in an archaeological site if 10% of the original amount of carbon 14 is still present.

Graph each function.

$f(x) = \sqrt{x+4}$ Parent function: Transformation: Domain: Range: 	$f(x) = \sqrt{x} - 3$ Parent function: Transformation: Domain: Range: 
$g(x) = 3^{x-5}$ Parent function: Transformation: Domain: Range: 	$h(x) = 2^x - 6$ Parent function: Transformation: Domain: Range: 

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SIMPLIFY EACH EXPRESSION:

11) $\left(\frac{-4s^6}{t^3r^5}\right)^3 =$

12) $\left(\frac{-2d^{11}f^6}{c^{18}}\right)^2 =$

13) $\left(\frac{2d^4}{4e}\right)^3 =$

14) $\frac{6r^3}{2r} =$

14) $\frac{-40s^6}{20s^3} =$

15) $\frac{21d^{18}e^5}{7d^{11}e^3} =$

16) $\left(11c^8\right)\left(-10c^4d\right) =$

17) $\left(9x^{10}z^2\right)\left(-x^5y^3\right) =$

18) $\left(-8f^6g\right)\left(-7f^2g^5h\right) =$

19) $\left(\frac{-24t^6}{8t^3}\right)^5 =$

20) $\left(\frac{d^{11}f^{16}}{d^6f^6}\right)^3 =$

21) $\left(\frac{7d^2}{14d^4}\right)^5 =$

Solve each radical equation.

22) $\sqrt{2x + 1} = 3$

23) $\sqrt{x + 3} = 2x$

24) $\sqrt{6x + 1} = 2x + 1$

25) $\sqrt{5x + 1} + 5 = 3x$