Chapter 7 & 8 Review

Due on day of test.   Write all answers/work on separate paper.   You will not receive credit for work/answers written on this paper.
*Problems that will be on the NON-CALC part of the test are starred.

Simplify the radical expression. Use absolute value symbols if needed.
*1. $\sqrt[4]{16x^{16}y^{12}}$

Multiply and simplify if possible.
*2. $\sqrt{6} \cdot \sqrt{2}$

*3. Simplify $\sqrt[3]{54a^{17}b^9}$.

Divide and simplify. Assume that all variables are positive.

*4. $\dfrac{\sqrt[3]{120x^{22}}}{\sqrt[3]{3x}}$

*5. A garden has width $\sqrt{13}$ and length $7\sqrt{13}$. What is the perimeter of the garden in simplest radical form?

Simplify.

*6. $8^{\frac{4}{3}}$

*7. $\sqrt{20} + \sqrt{75} - \sqrt{80}$

*8. $\sqrt{24} + \sqrt{54} - \sqrt{96}$

Multiply.
*9. $\left(7 - \sqrt{2}\right)\left(8 + \sqrt{2}\right)$

*10. $(\sqrt{5} + \sqrt{3})(\sqrt{5} - \sqrt{3})$

Solve the equation.
*11. $\sqrt{x - 3} - 4 = 2$

*12. $(x - 4)^{\frac{2}{3}} = 9$

13. An initial population of 895 armadillos increases at an annual rate of 7%. Write an exponential function to model the armadillo population.   How many armadillos will there be after 6 years?

Write an exponential function $y = ab^x$ for a graph that includes the following points.
14. (1, 15) and (0, 6)

15.   (2, 28) and (0, 7)

Find the annual percent increase or decrease.
16. $y = 0.35(1.75)^x$

17. $y = 0.35(2.3)^x$

18. $y = 0.35(0.7)^x$

19. The half-life of a certain radioactive material is 52 days. An initial amount of the material has a mass of 801 kg. Write an exponential function that models the decay of this material. Find how much radioactive material remains after 10 days. Round your answer to the nearest thousandth.

20. The half-life of a certain radioactive material is 12 hours. An initial amount of the material has a mass of 3 kg. Write an exponential function that models the decay of this material. Find how much radioactive material remains after 33 hours. Round your answer to the nearest thousandth.

21. Suppose you invest $1600 at an annual interest rate of 3.6% compounded continuously. How much will you have in the account after 4 years?

22. Suppose you invest $900 at an annual interest rate of 5.5% compounded continuously. How much will you have in the account after 7.5 years?

23. Suppose you invest $700 at an annual interest rate of 7.7% compounded monthly. How much will you have in the account after 10 years?

24. Suppose you invest $350 at an annual interest rate of 5.1% compounded quarterly. How much will you have in the account after 6 years?

25. How much money invested at 6% compounded continuously for 6 years will yield $750?

26. The table shows some notable earthquakes that occurred in recent years. How many times more energy was released by the earthquake in the Scotia Sea than by the earthquake in Cuba?

Earthquake Location	Date	Richter Scale Measure
New Zealand	February 2, 2014	6.5
Fontana, California	January 15, 2014	4.4
Puerto Rico	January 12, 2014	6.4
Cuba	January 9, 2014	5.1
Scotia Sea	November 17, 2013	7.7

Graph the exponential function. Write the equation for the graph's asymptote and give the domain and range.

*27. $y = 5^x$

*28. $y = 3^x$

*29. $y = 3(4)^x$

*30. $y = 2(3)^x$

*31. $y = 2(3)^{x+4} + 1$

*32. $y = 7\left(\dfrac{1}{4}\right)^{x-1} + 2$.