Chapter 7 Review Extra Practice

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1. Write each expression as a single power with a positive exponent.

a) $\dfrac{(9^6)(9^4)}{9^{12}}$

b) $\dfrac{(6^5)^{-3}}{(6^{-1})(6^7)}$

c) $\left(\dfrac{4}{5}\right)^{-8} \div \left(\left(\dfrac{4}{5}\right)^{-7}\left(\dfrac{5}{4}\right)^{7}\right)^{-5}$

d) $\left(\dfrac{(7^{-1})(7^2)}{(7^{-3})(7^{-4})}\right)\left(\dfrac{7^2}{7^9}\right)^3$

2. Write each expression as a single power with a positive exponent. Convert all radicals to fractional powers.

a) $(4^{\frac{2}{9}})(4^{-\frac{3}{8}})$

b) $\sqrt[6]{(5^{\frac{2}{7}})(5^{-\frac{1}{2}})}$

c) $\sqrt[7]{\dfrac{(9^{-2})^8}{(9^6)(9^{-10})}}$

d) $\sqrt[4]{((8^{-\frac{1}{5}})(8^{\frac{3}{7}}))^{\frac{1}{3}}}$

3. Solve each equation for x. Assume $x \geq 0$. Do not use a calculator.

a) $\dfrac{x^3}{x^{-2}} = 243$

b) $((x^{-\frac{1}{3}})(x^{-\frac{5}{12}}))^4 = 125$

c) $((x^{11})^{-2})(x^5)^5 = \dfrac{1}{216}$

d) $\sqrt[4]{((x^{\frac{1}{3}}) \div (x^{-\frac{1}{15}}))^2} = 4$

4. The amount of money in a bank account can be modelled by the equation $A(t) = 1200(1.055)^t$, where $A(t)$ is the amount of money in the account after t years.

a) How much money was initially deposited in the account?

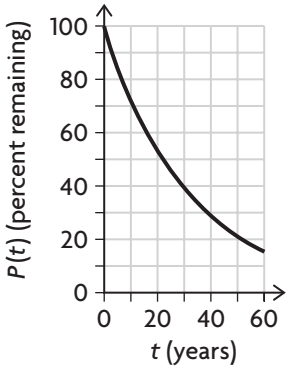
b) What is the yearly interest rate of this account?

c) How much money is in the account after 15 years?

d) Graph the function $A(t)$.

e) Use the graph in part (d) to estimate to the nearest year the length of time it takes for the money in the account to double.

5. Examine the graph below of the decay of a radioactive substance over time.



a) Estimate the half-life of this element.

b) Use your answer from part (a) to find a formula for $P(t)$.

c) Use the formula from part (b) to determine to the nearest percent the amount of the element left after 100 years.