

SM3-A HW #7-10 (Unit 7 Practice Test)

Period _____

Solve each equation. Remember to check for extraneous solutions.

1) $2 = \sqrt{-6 - n}$

2) For the following function: (a) what is the domain? (b) what is the range?

$$f(x) = 2 \cdot 4.5^x + 1$$

3) A bar of steel was removed from a blast furnace at 1900 F. It was then "quenched" by dipping it into a tank of oil that was at 200 F. It took 3 minutes to reduce the temperature of the steel bar to 350 F.

a) What is base of the exponential (accurate to 3 decimal places)?

b) How long must the steel bar be quenched to lower its temperature to 250 F?

4) CitiBank will pay 5.5% annual interest compounded continuously. If you deposit \$3500, how much money will you have after 15 years? $A(t) = A_0 e^{rt}$

5) Zions Bank will pay 5.5% annual interest compounded continuously. If you deposit \$1000, how long will it take for your money to triple?

6) An arrow is shot up from the top of 30 story building (300 feet tall) with an initial upward velocity of 410 feet per sec. The modeling equation is $h(t) = -16t^2 + 410t + 300$

a) What is the maximum height the arrow will reach?

b) When will it reach that height?

c) When will it hit the ground at the bottom of the cliff?

Solve each question. Round your answer to the nearest hundredth.

7) It takes Lea 12 hours to pick forty bushels of apples. Scott can pick the same amount in 11 hours. Find how long it would take them if they worked together.

Write each expression in exponential form.

8) $(\sqrt[4]{5p})^3$

Write each expression in radical form.

9) $(7p^2)^{\frac{1}{3}}$

Simplify. Your answer should contain only positive exponents with no fractional exponents in the denominator.

10) $2x^{\frac{3}{4}}y^{\frac{3}{2}} \cdot 3x^{-\frac{7}{4}}y^{\frac{1}{2}}$

Simplify.

11) $\left(x^{\frac{3}{2}}y^{\frac{5}{4}}\right)^{\frac{1}{4}}$

12) $3\sqrt{24} + 2\sqrt{6}$

13) $-5\sqrt{5}(\sqrt{10} + 5)$

14) $\sqrt{125x^2y}$

15) $\sqrt{147x^3y^2}$

16) $\frac{5\sqrt{15}}{4\sqrt{27}}$

Simplify each expression.

17) $\frac{6}{r-4} - \frac{2}{2r+1}$

18) $\frac{a+6}{5a} \cdot \frac{5a}{3a^3+30a^2}$

Simplify each and state the excluded values.

19) $\frac{4a^3}{4a^2-18a}$