

## SM3-A HW #7-11 (Unit 7 Pre-TEST)

Period \_\_\_\_\_

**Solve each equation. Remember to check for extraneous solutions.**

1)  $-20 = -5\sqrt{34 - 2x}$

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

$$f(x) = 7 \cdot \left(\frac{1}{3}\right)^x - 2$$

- 3) A cup of hot chocolate was removed from a microwave oven when it reached 95 C. It was placed on the kitchen counter to cool. The room temperature in the kitchen was 25 C. It took 4 minutes for the hot chocolate to cool to 45 C.

- a) What is the equation that models temperature as a function of time? (Round your base to the third decimal place.)
- b) What is the temperature of the hot chocolate after 6 minutes?
- c) How long would it take for the hot chocolate to cool to 30C?

- 4) CitiBank will pay 2.5% annual interest compounded continuously. If you deposit \$500, how much money will you have after 25 years?
- $A(t) = A_0 e^{rt}$

- 5) Wells Fargo Bank will pay 4.5% annual interest compounded continuously. If you deposit \$100, how long will it take for your money to double?

- 6) An arrow is shot up from ground level. It leaves the bow when it is 6 feet off the ground. The arrow's initial upward velocity was 350 feet per sec. The modeling equation is

$$h(t) = -16t^2 + 350t + 6$$

- 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 Paul 11 minutes to revarnish a pipe organ. Stefan can revarnish the same pipe organ in 14 minutes. Find how long it would take them if they worked together.

**Write each expression in radical form.**

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

**Simplify.**

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

13)  $2\sqrt{5}(\sqrt{10} + \sqrt{2})$

15)  $\sqrt{448xy}$

**Simplify each expression.**

17)  $\frac{4}{3} - \frac{2x}{x-6}$

**Simplify each and state the excluded values.**

19)  $\frac{35n^2}{15n^2 - 50n}$

**Write each expression in exponential form.**

8)  $(\sqrt[5]{10n})^6$

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

10)  $x^{\frac{5}{4}}y^2 \cdot 3x^2y^{\frac{1}{2}}$

12)  $-3\sqrt{5} + 2\sqrt{45}$

14)  $\sqrt[3]{135xy^5}$

16)  $\frac{\sqrt{20}}{\sqrt{125}}$

18)  $\frac{6}{8x^2 + 16x} \cdot \frac{12x + 24}{6}$