**MAT 171 - CLASS NOTES - Section 4.2: Logarithmic Functions**

1) The **logarithmic form** of

2) The **exponential form** of

3) Rewrite in exponential form.

   a) $\log_3 81 = 4$

   b) $\log_5 \frac{1}{25} = -2$

4) Rewrite in logarithmic form.

   a) $64^{\frac{2}{3}} = 16$

   b) $27^{\frac{-1}{3}} = \frac{1}{3}$

5) Basic Log Properties

a) $log_b 1 = 0$

b) $log_b b = 1$

c) $log_b b^x = x$

d) $b^{log_b x} = x, x > 0$

6) Simplify without using a calculator

a) $log_9 1$

b) $log_3 3^5$

c) $log_5 5$

d) $7^{log_7 23}$

7) Simplify

a) $log_2 32$

b) $log_4 \frac{1}{16}$

c) $log_\pi \pi^6$

d) $log_6 \sqrt[2]{6}$

8) **Logarithmic Notation**

9) Evaluate using the calculator. Round to three decimal places.

a) $log13$

b) $5ln4.83$

10) Evaluate $lne^{-4}$ without using a calculator.

11) Solve the equation for $x$.

a) $log_5 x + 4 = 2$

b) $log_{81}x = \frac{3}{4}$

12) The percentage of adult height attained by a girl who is $x$ years old can be modeled by $f(x) = 62 + 35logx - 4$, where $x$ represents the girl's age (from 5 to 15) and $f(x)$ represents the percentage of her adult height. Approximately what percentage of her adult height has a girl attained at age ten? Round answers to the nearest tenth of a percent.