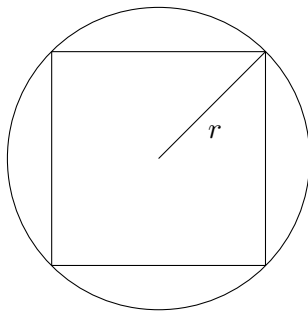


Math 29  
PAL Worksheet 14

1. A square is inscribed in a circle of radius  $r$ .
  - a. Write a function that gives the area of the square as a function of  $r$ .
  - b. Write a function that gives the perimeter of the square as a function of  $r$ .
  - c. Write a function that gives the area outside the square but inside the circle as a function of  $r$ .



2. Write each of the following equations involving exponents in its logarithmic form:
  - a.  $6^3 = 216$
  - b.  $10^{-2} = 0.01$
  - c.  $5^x = 11$
  - d.  $e^7 = z$
  
3. Write each of the following logarithmic equations in its exponential form.
  - a.  $\log_9 81 = 2$
  - b.  $\log_b 7 = 12$
  - c.  $\log 1000 = 3$
  - d.  $\ln 15 = z$

4. Is it possible to write 51 as a power of  $e$ ? Explain.

5. Without the aid of a calculator, determine between which two integers the value of  $\log_4 50$  lies. Explain how you know.

6. Evaluate each logarithm. Do not use a calculator.

- |                   |  |  |   |
|-------------------|--|--|---|
| a. $\log_5 125$   | b. $\log_9 3$                                | c. $\log_{\frac{2}{5}} \left( \frac{125}{8} \right)$ | d. $\log_3 \left( \frac{1}{81} \right)$ |
| e. $\log_{12} 12$ | f. $\log_{0.3} \left( \frac{100}{9} \right)$ | g. $\log_{\frac{1}{9}} 3$                            | h. $\log_8 (2\sqrt{2})$                 |
| i. $\log_7 1$     | j. $\log_{\sqrt{5}} (\sqrt[7]{5})$           | k. $\log_{125} (5^{0.63})$                           | l. $\log_9 (\log_2 8)$                  |