

Math 115 Carter Sample Test 2 Spring 2004

1. Use the rules of logarithms to write the following expressions as a single logarithm:

(a) $\log_B(x) + \log_B(x^2 + 1) - \log_B(3x - 2)$

(b) $\ln(2) + \ln(10) - \ln(5)$

2. Solve the equations:

(a) $2^x 2^{(x+3)} = 16$

(b) $\log_{10}(x) + \log_{10}(x + 10) = 1$

(c) $\log_3(2x - 1) - \log_3(x - 4) = 2$

(d) $\log_5(x + 4) + \log_5(x - 4) = 2$

(e) $\sin(x) = \sqrt{3}/2$, where $0 \leq x \leq \pi/2$

3. sketch the graphs:

(a) $f(x) = 4 \times 10^{(2x-3)}$

(b) $f(x) = 3 \log_2(x + 1)$

(c) $f(x) = 3 \sin(2x)$

(d) $f(x) = \cos(2\pi x)$

(e) $f(x) = 2 \sin(x/2) - 1$

(f) $f(x) = -4 \cos(3x - \pi)$

4. Compute the difference quotient $\frac{f(x+h)-f(x)}{h}$ for the function $f(x) = e^x$.

5. Covert from degrees to radians or vice versa.

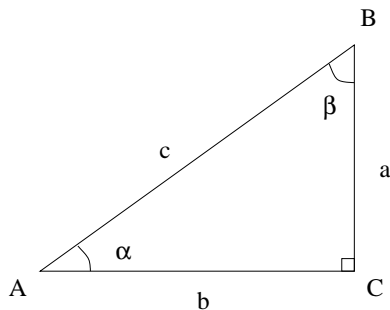
(a) 225°

(b) $\frac{\pi}{18}$

(c) 630°

(d) $\frac{7\pi}{6}$

6. For the triangle depicted, evaluate the 6 trigonometric functions of α when the sides or angles are as indicated (Note the scale is not accurate!):



- (a) $a = 3, b = 4$
- (b) $\alpha = 30^\circ$
- (c) $c = 13, b = 12$.
- (d) $\alpha = \beta$
7. The half-life of peanuts in the Tappa Tappa Keg Frat house is 8 days. The frat bros buy 10 barrels of peanuts on Sept. 1. How long will it take until 86% of the peanuts are GONE? How many barrels of peanuts will remain on Sept 30?
8. Compute the amount of time it will take for \$800,000 to grow to 2.5 million dollars assuming continuously compounded interest at 5.5 % per year.