

Math 125
Exam #3
Spring 2011

Name:

1. [10 pts.] Solve $8^{3-4x} = 64^{x-1}$
2. [10 pts.] Find the domain of $f(x) = \sqrt{\ln(x-1)}$
3. [10 pts.] For the function $f(x) = 8 - \log_5(3x-2)$ find the inverse f^{-1} .
4. [10 pts. each] Solve each equation. Express any irrational solution in both exact form and as a decimal rounded to 3 decimal places
 - (a) $\log_3(2-7x) = 2$
 - (b) $\log_5(2x+3) = \log_5 3$
 - (c) $\log_8(x+6) = 1 - \log_8(x+4)$
 - (d) $7^x = 50$
5. [10 pts.] Write $\log_4(x^2-1) - 2\log_4(x+1)$ as a single logarithm.
6. [10 pts.] Convert 37.419° to $D^\circ M' S''$ form. Show work, and round your answer to the nearest second.
7. [5 pts. each] Convert each as instructed.
 - (a) -135° to radians, with answer expressed as a multiple of π .
 - (b) $5\pi/12$ to degrees.
8. [10 pts.] A water sprinkler sprays water over a distance of 30 feet while rotating through an angle of 135° . What area of lawn receives water?
9. [15 pts.] The point $(5, -12)$ is on the terminal side of an angle θ in standard position. Find the exact values of the six trigonometric functions of θ .
10. [5 pts.] Find the exact value of $\sec 540^\circ$.
11. [10 pts.] Given that $\sin \theta = 4/5$ and $\cos \theta = -3/5$, find the exact value of each of the four remaining trigonometric functions.
12. [10 pts.] Given that $\cos \theta = -4/5$ and θ is in quadrant III, find the exact value of each of the remaining trigonometric functions.
13. [10 pts.] Determine the amplitude and period of $y = -\frac{1}{2} \cos\left(\frac{3}{2}x\right)$