

Math 125
Exam 3
Fall 2010

Name:

1. 10 pts. Solve $9^{-x+15} = 27^x$
2. 20 pts. Find the domain of
$$f(x) = 8 + 5 \log_3(2x - 3)$$
and also find f^{-1} (the inverse of f).
3. 10 pts. each Solve each equation
 - (a) $\log_5 x = 3$
 - (b) $\log_3(x^2 + 1) = 2$
4. 10 pts. Write $2 \log_7 u - \log_7 v$ as a single logarithm.
5. 10 pts. Given $\ln(y - 3) = -4x + \ln C$, where C is a positive constant, express y as a function of x .
6. 10 pts. each Solve each equation. Express irrational solutions in exact form and as a decimal rounded to 3 decimal places
 - (a) $\log_5(2x + 3) = \log_5 3$
 - (b) $\log(2x) - \log(x - 3) = 1$
 - (c) $3^x = 14$
7. 10 pts. Convert 29.411° to $D^\circ M' S''$ form. Show work, and round your answer to the nearest second.
8. 5 pts. each Convert each as instructed.
 - (a) 330° to radians, with answer expressed as a multiple of π .
 - (b) $-5\pi/6$ to degrees.
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
$$y = -\frac{1}{2} \cos\left(\frac{3}{2}x\right)$$