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Exam III
June 15, 2009

To receive full credit all your answers should be carefully justified. Each solution must be the student's own work.

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1. Solve for x, if $3^{2x} = 2^{3x-1}$.

2. Solve for x, if $\log(x^2 + x + 28) = 2$.

3.

(a) Convert $-54°$ into radians.

(b) What is the quadrant of θ, if $\csc\theta < 0$ and $\cos\theta > 0$?

4. When an angle α is placed in standard position its terminal side contains the point $(-2, 3)$. Find $\cos\alpha$, $\cot\alpha$, and $\csc\alpha$.

5. Using a reference angle, find the exact value of $\tan 135°$.

6. Find $\sec\alpha$ and $\csc\alpha$, if α is an acute angle such that $\tan\alpha = 4/3$.

7.

(a) Find $\tan t$ and $\sec t$, if $P(t)$ has the coordinates $(-0.8, -0.6)$.

(b) Find $\sin 25°$ using cofunctions, if $\sin 65° = 0.9063$, $\cos 65° = 0.4226$, and $\tan 65° = 2.1445$.

8. Find the six trigonometric functions of $-\pi/3$.

9. Prove the following identity.

$$1 - \cot^3\theta = (1 - \cot\theta)(\csc^2\theta + \cot\theta)$$

10. Compute the exact value of $\cos 75°$ using an addition or subtraction formula..