

Practice Test 2. June 27, 2007.

Math 0115 Sec 0101 Summer 2007

You may not use a calculator for this test.

[25] 1. Let $f(x) = \frac{(4x - 4)(x + 2)^3}{(x - 6)^2(2x + 1)^2}$

- (A) Find the y -intercept, if any.
 - (B) Find the x -intercepts, if any.
 - (C) Find the vertical asymptotes, if any.
 - (D) Find the horizontal asymptotes, if any.
 - (E) Using the information from (A)-(D), sketch the graph of $f(x)$.
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[15] 2. On the same set of axes, sketch and label the graph of:

$$\begin{aligned}f(x) &= 2^x \\g(x) &= 5^{-x} \\h(x) &= 5^{-x} + 1 \\i(x) &= \ln(x) \\j(x) &= \ln(x - 1) \\k(x) &= \log_2(-x)\end{aligned}$$

Your graph doesn't have to be perfect, but you must label the asymptotes, if any, and make sure that your points for the small values are accurate on the grid.

[10] 3. Find all solutions to the exponential equation: $e^{2x-3} = 1$

[10] 4. Find all solutions to the logarithmic equation: $\log_5(x^2) = 2\log_5(x) - \log_5(x - 5) + 1$. Be sure to check your answers.

[10] 5. Suppose that the point $P = (x, \frac{4}{5})$ is on the unit circle. (A) What are all of the possible values for x ? (B) Suppose you are given that P is in Quadrant II. What must x be?

[10] 6. Find the following values:

(A) $\tan \frac{\pi}{6}$ (B) $\sin \frac{3\pi}{2}$ (C) $\csc \frac{-\pi}{3}$ (D) $\cot \frac{-5\pi}{6}$ (E) $\sec \frac{\pi}{3}$

[10] 7. Given that the terminal point of t is in Quadrant IV and $\tan t = -\sqrt{3}$, find $\cos t$. *Hint:* it may be easier to figure out $\sec t$ first.

[10] 8. Let $f(x) = 2\cos(2x) + 2$. (A) What are the period and amplitude of $f(x)$? (B) What phase shift is applied, if any? (C) Sketch the graph of both $f(x)$ and $y = \cos x$ on the same axes.
