

You may keep this page of questions. Turn in your answers with all of your work on the yellow paper and pink paper. You are **NOT** allowed to use calculators on questions #1 – 5. Work these questions on the yellow paper. After you have finished these first five questions, turn in the first part of the exam and receive pink paper to use for the last five questions.

(1) 12 Points. Find exact values for the six trigonometric functions at the angle θ if θ is an angle in standard position whose terminal side passes through the point $(5, -4)$.

(2) 8 Points. Find the reference angle for the angle θ if $\theta = \frac{9\pi}{7}$. (You need to find an exact value in radians for θ_R .)

(3) 8 Points. (a) Find $W(\frac{\pi}{2})$. (b) Find $W(\frac{7\pi}{6})$.

(4) 10 Points. Given that $\log_b(2) = 3.24$, $\log_b(3) = 5.13$, $\log_b(5) = 7.51$, and $\log_b(7) = 9.08$, use these (and laws of logarithms) to compute

$$(a) \log_b\left(\frac{5}{\sqrt{7}}\right) \quad (b) \log_b\left(\frac{2}{3} + \frac{1}{2}\right)$$

(5) 12 Points. Sketch a graph of $y = -5 + 2\sin(\frac{\pi x}{3})$. Show scales.

Turn in your work and answers for the first five questions and any remaining yellow paper before continuing.

(6) 8 Points. Find a decimal approximation for $\log_5(23)$.

(7) 8 Points. Approximate the degree measure of an angle α to the nearest minute if α has radian measure 2.8719 radians.

(8) 12 Points. Use your calculator to find approximate values for the following. Round appropriately.

$$(a) \cos(11^\circ 27' 39'') \quad (b) \sin(4.1887) \quad (c) \cot(97.3^\circ)$$

(9) 10 Points. Solve $5^{t-3} = 3^{2t}$. Find both an exact answer and a decimal approximation.

(10) 12 Points. Find the angle of elevation of the sun if a 42.45 foot flagpole casts a shadow which is 98.43 feet long.