

Name _____

EXAM INSTRUCTIONS

- Your cell phone must be off. You cannot use a calculator.
- You must show all your work. Work neatly on a **different piece of paper**, numbering them, showing clearly the question number and section, for example: 1a.

1. Find the domain of the following functions:

a. $h(x) = \sqrt{\frac{2x}{x-4}}$

b. $f(x) = \log(x^2 + 2x - 3)$

2. Solve the following equations.

a. $e^{2x} + 2e^x - 3 = 0$

b. $3 + 4 \ln(2x) = 15$

c. $\cos x + \cos^2 x + 1 = 2 - \sin^2 x$

3. Find the **exact** value of $\cos\left(\frac{26\pi}{4}\right)$

4. For the following trigonometric function, find the amplitude, period, and phase shift. State the domain and range.

$$y = \frac{1}{5} \sin 4\left(x + \frac{\pi}{3}\right)$$

5. The length of the hypotenuse of a right angled triangle is 3 and one of its acute angles is 30° .

- Sketch one possible triangle that satisfies this information.
- Find the lengths of the other two sides of the triangle.

6. Given that $\sin \alpha = 3/5$ and $\cos \alpha = 4/5$, find $\tan \alpha, \cot \alpha, \sec \alpha, \csc \alpha$.

7. Write the equation of the following *sine* function.

Hint: $y = A \sin(\omega(x - \alpha)) + C$.

