Calculus ABC Test I—Version 4020 **Name:** _____

Lecture section: _____ **Student Number:** _____

PUT ANSWERS IN BOXES. NO BOOKS/NOTES/CALCULATORS. DO YOUR OWN WORK. Simplify answers where possible. Include units where needed. All angles are in radians. $\log = \log_{10}$.

1. Simplify as far as you can:

$$\frac{x-2}{x^2-4}$$

2. Simplify by combining using a common denominator:

$$u + \frac{u}{u+1}$$

3. Solve for x:

$$\sqrt{x} + 1 = \sqrt{x+9}$$

4. Solve for y:

$$y^2 + 2y - 2 = 0$$

5. Solve for x:

$$4x + 7 \leq 19$$

6. Find the equation of the line through the point (-1,2) with slope $-\frac{2}{3}$ in *slope-intercept* form.

7. Factor: $2w^2 - 7w + 6$

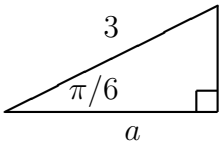
8. Find the value of:

$$\sin\left(\frac{\pi}{3}\right)$$

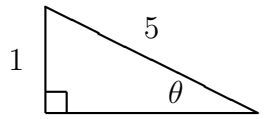
9. Find the value of:

$$\tan\left(\frac{\pi}{2}\right)$$

10. Find the value of a:



11. Find the value of $\cos(\theta)$:



12. Graph the function $y = \cos(x)$ for $-\pi \leq x \leq \pi$.
Label with the following values (if applicable): each intercept, location of each asymptote, and (x, y) coordinates of each min and max.

13. Simplify and eliminate any negative exponents:

$$\frac{x^{-3}}{x^{-5}}$$

14. Simplify:

$$(-2)^4$$

15. Solve for t (write answer as a rational number):

$$\left(\frac{1}{10}\right)^{5-2t} = 100$$

16. Solve for x:

$$3^x = 16$$

17. Graph the function $y = -2x + 1$.
Label with the following values (if applicable): each intercept, slope, and (x, y) coordinates of vertex.

18. Graph the function $y = x^2 + 4x$.
Label with the following values (if applicable): each intercept, slope, and (x, y) coordinates of vertex.

19. Find the area of a sector of a circle of radius 2 meters swept by the angle $\pi/8$ radians.

20. Find the volume of a rectangular box with sides 4 feet, 7 feet, and 5 feet.