Calculus ABC Test I—Version 7915 **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 by combining using a common denominator:

$$\frac{y}{1-y} + \frac{2}{y-1}$$

2. Simplify by combining using a common denominator:

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

3. Solve for y:

$$\frac{6y-2}{2} = y+5$$

4. Solve for x:

$$\sqrt{2x+1} + 1 = x$$

5. Solve for s:

$$-1 < 2s - 5 \leq 7$$

6. Find the equation of the line with x-intercept -2 and y-intercept 3 in *point-slope* form.

7. Factor: $x^2 + 2x - 8$

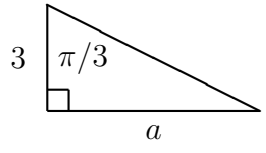
8. Find the value of:

$$\tan\left(\frac{2\pi}{3}\right)$$

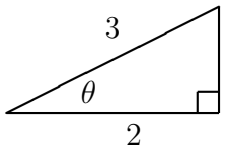
9. Find the value of:

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

10. Find the value of a:



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



12. Graph the function $y = \sin(x)$ 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:

$$(-125)^{-1/3}$$

14. Simplify:

$$r^{3/2} r^{5/3}$$

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

$$5^{1-3x} = 25$$

16. Solve for x:

$$5^{3-x} = 4$$

17. Graph the equation $-2x + 3y = 1$.
Label with the following values (if applicable): each intercept, slope, and (x, y) coordinates of vertex.

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

19. Find the circumference of a circle which has radius 7 cm.

20. Find the volume of a sphere of radius 9 mm.