Calculus ABC Test I—Version 6813 **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:

$$\frac{x^2 - 9}{x^2 - x - 6}$$

2. Simplify by combining using a common denominator:

$$\frac{x}{x-4} - \frac{3}{x+6}$$

3. Solve for x:

$$x + \frac{9}{x} = 6$$

4. Solve for y:

$$\sqrt{5-y} + 1 = y - 2$$

5. Solve for x:

$$4x + 7 \leq 19$$

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

7. Find all roots of: $6x^2 + 5x - 4 = 0$

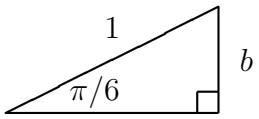
8. Find the value of:

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

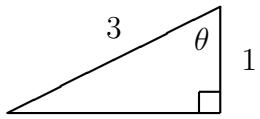
9. Find the value of:

$$\cos\left(\frac{\pi}{6}\right)$$

10. Find the value of b:



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



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:

$$\left(\frac{25}{64}\right)^{3/2}$$

14. Simplify:

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

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

$$4^y = 8$$

16. Solve for x:

$$5^{x-3} = 8$$

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

18. Graph the function $y = x^2 - 4$.
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 6 meters swept by the angle $\pi/9$ radians.

20. Find the volume of a right circular cylinder (a can) with radius 6 cm and height 3 cm.