Calculus ABC Test I—Version 3397 **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:

$$\frac{y}{y-2} + \frac{y-6}{3}$$

2. Simplify by combining using a common denominator:

$$\frac{1}{z+3} + \frac{1}{z^2-9}$$

3. Solve for x:

$$\sqrt{x} - 5 = 7$$

4. Solve for x:

$$x^2 + 5x = 24$$

5. Solve for s:

$$2 \leq s + 5 < 4$$

6. Find the equation of the line between the points $(2, 1)$ and $(1, 6)$ in *point-slope* form.

7. Factor: $8x^2 + 10x + 3$

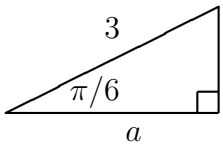
8. Find the value of:

$$\cos(\pi)$$

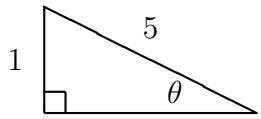
9. Find the value of:

$$\tan(0)$$

10. Find the value of a:



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



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 and eliminate any negative exponents:

$$\left(8x^6\right)^{-2/3}$$

14. Simplify:

$$\left(3x^2\right)\left(4x^5\right)$$

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

$$9^{5x-1} = 81$$

16. Solve for x:

$$4^{x+2} = 9$$

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

18. Graph the function $y = -x^2 + 2$.
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 9 mm.

20. Find the volume of a right circular cylinder (a can) with diameter 3 cm and height 2 cm.