Calculus ABC Test I—Version 1854 **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:

$$\frac{17x}{8} - \frac{7x}{8}$$

2. Simplify by combining using a common denominator:

$$\frac{1}{x+1} + \frac{1}{x-1}$$

3. Solve for t:

$$5 + \frac{2}{t} = 1$$

4. Solve for t:

$$\frac{6}{t-2} = \frac{t^2+t}{t-2}$$

5. Solve for x:

$$\frac{3+x}{3-x} \geq 1$$

6. Find the equation of the line through the point (1,6) and parallel to the line $x+2y=6$ in *slope-intercept* form.

7. Factor: $r^2 + r - 12$

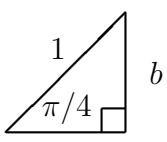
8. Find the value of:

$$\tan\left(\frac{7\pi}{4}\right)$$

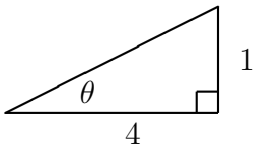
9. Find the value of:

$$\cos\left(\frac{\pi}{4}\right)$$

10. Find the value of b:



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



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:

$$\frac{(2x^3)^2 (3x^4)}{(x^3)^4}$$

14. Simplify and eliminate any negative exponents:

$$\frac{y^{-3}z^4}{y^{-5}z^5}$$

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

$$8^x = 4$$

16. Solve for t:

$$3 \cdot 2^t = 10$$

17. Graph the function $y = 5x - 6$.
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 area of a sector of a circle of radius 3 cm swept by the angle $\pi/4$ radians.

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