Calculus ABC Test I—Version 6236 **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:

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

2. Simplify by combining using a common denominator:

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

3. Solve for t:

$$3 + \frac{2}{t} = \frac{1}{3}$$

4. Solve for x:

$$\frac{x-2}{5} = \frac{x+4}{20}$$

5. Solve for x:

$$\tfrac{1}{2} + x \leq \tfrac{5}{6}$$

6. Find the equation of the line between the points $(-1, 0)$ and $(-2, 5)$ in *slope-intercept* form.

7. Find all roots of: $3w + w^2 = 0$

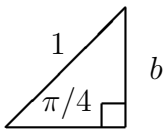
8. Find the value of:

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

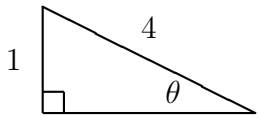
9. Find the value of:

$$\cos\left(\frac{4\pi}{3}\right)$$

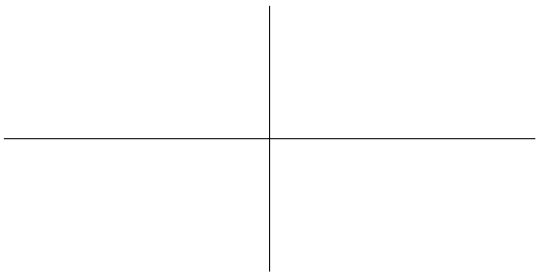
10. Find the value of b:



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



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

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

14. Simplify and eliminate any negative exponents:

$$\left(x^{2/5}\right)^{-3/4}$$

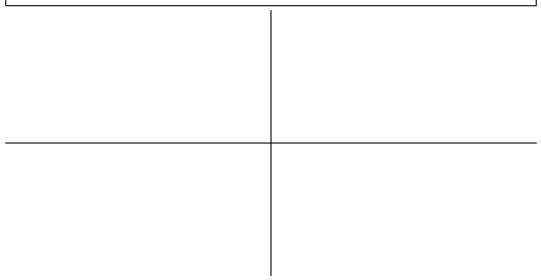
15. Solve for t (write answer as a rational number):

$$9^{t+2} = 3$$

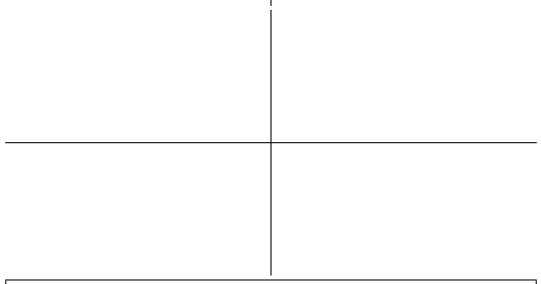
16. Solve for t:

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

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



19. Find the perimeter of a triangle with sides of length 8 meters, 6 meters, and 7 meters.

20. Find the volume of a right circular cylinder (a can) with diameter 5 mm and height 4 mm.