Calculus ABC Test I—Version 8591 **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:

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

2. Simplify as far as you can:

$$\frac{6z+18}{9z+27}$$

3. Solve for x:

$$\frac{x+2}{x-3} = 5$$

4. Solve for t:

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

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. Factor: $4t^2 - 12t + 9$

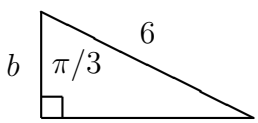
8. Find the value of:

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

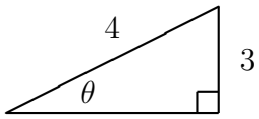
9. Find the value of:

$$\tan\left(\frac{5\pi}{3}\right)$$

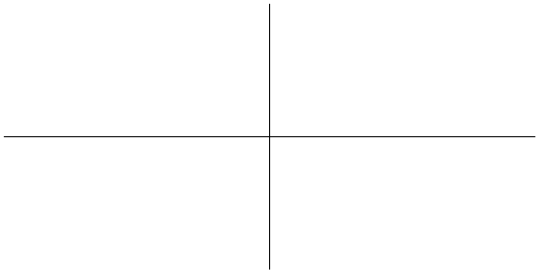
10. Find the value of b:



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



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

$$z^{2/3} z^{1/5}$$

14. Simplify and eliminate any negative exponents:

$$\left(\frac{4}{9}\right)^{-1/2}$$

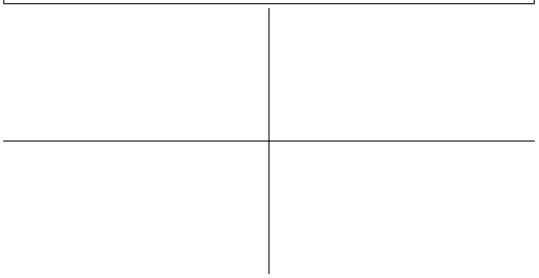
15. Solve for x (write answer as a rational number):

$$\left(\frac{1}{4}\right)^{1-2x} = 2$$

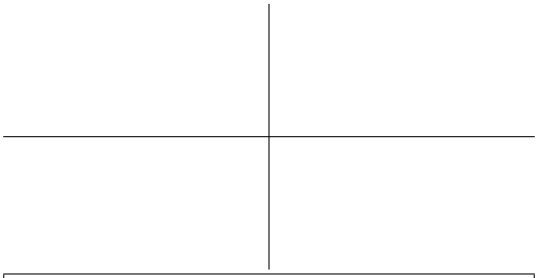
16. Solve for x:

$$\left(\frac{1}{4}\right)^{x} = 75$$

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



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



19. Find the area of a circle which has circumference 16 mm.

20. Find the volume of a sphere of radius 3 cm.