Calculus ABC Test I—Version 2023

Lecture section: _____

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:

$$\frac{x^2 - x - 2}{x^2 - 1}$$

2. Simplify by combining using a common denominator:

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

3. Solve for t:

$$\frac{1}{t-2} = 1 + \frac{2}{t^2 - 2t}$$

4. Solve for x:

5. Solve for x:

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

Student Number:





Key



$$y - 1 = 1(x - 0)$$

 $y - 2 = 1(x - 1)$

$$x = 7, x = -4$$



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

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

- 7. Find all roots of: $x^2 3x 28 = 0$
- 8. Find the value of:

 $\cos(0)$

9. Find the value of:

$$\cos\left(\frac{5\pi}{6}\right)$$

10. Find the value of *a*:



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



12. Graph the function $y = \sin(x)$ for $-\pi \le x \le \pi$. Label with the following values (if applicable): each intercept, location of each asymptote, and (x, y) coordinates of each min and max.

13. Simplify:

 $(-125)^{-1/3}$

14. Simplify and eliminate any negative exponents:

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

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

 $10^{4z+5} = 1000$

16. Solve for z:

$$7^{z+2} = 3$$

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

19. Find the perimeter of a rectangle which has length 7 meters and width 5 meters.

20. Find the volume of a right circular cylinder (a can) with diameter 4 meters and height 6 meters.

