Calculus ABC Test II—Version 9096 **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. Find the equation of the line through the point (2,5) with slope 0 in *slope-intercept* form.

2. Find the value of:

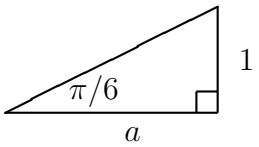
$$\arcsin\left(-\frac{\sqrt{2}}{2}\right)$$

3. Solve for y:

$$\frac{2y}{y+2} = \frac{1+2y}{y}$$

4. Rewrite by completing the square: $x^2 + x - \frac{3}{4}$

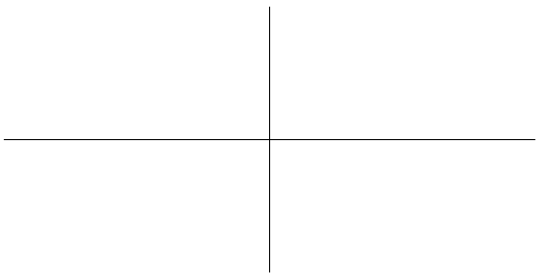
5. Find the value of a:



6. Simplify as far as you can:

$$\ln(5e^3)$$

7. Graph the function $y = \ln(x)$.
Label with the following values (if applicable): each intercept, location of each asymptote, and (x, y) coordinates of each min and max. Also include the coordinates of one other point.



8. Solve for x:

$$4^{3x-2} = 5$$

9. If $f(t) = 3t^4 + 7t^3 - 4t + 3$, find $f'(t)$.

10. If $g(\theta) = \tan(\theta)$, find $g'(\theta)$.

11. If $z = \tan^3(t)$, find dz/dt.

12. If $y = \dfrac{1}{1-2x}$, find dy/dx.

13. Find the derivative of

$$g(t) = 3t^4 e^t$$

14. Find the derivative of

$$g(t) = \frac{e^t}{\tan(t)}$$

15. Find the derivative of

$$f(x) = \frac{1+x}{\sqrt{x}}$$

16. Find a function $f(t)$ whose derivative is:

$$f'(t) = 3e^t + \sin(t)$$

17. Evaluate the indefinite integral:

$$\int (2-x)^4 \, dx$$

18. Evaluate the indefinite integral:

$$\int \frac{x^2}{x^3+5} \, dx$$

19. Evaluate the definite integral:

$$\int_0^2 (6x^2 - x) \, dx$$

20. Evaluate the definite integral:

$$\int_{-\pi/2}^{\pi/2} \sin(2\theta) \, d\theta$$