Calculus ABC Test II—Version 5525 **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 (2,3) and parallel to the line $x - 3y = 6$ in *point-slope* form.

2. Find the value of:

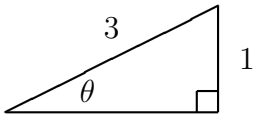
$$\arcsin\left(\frac{\sqrt{3}}{2}\right)$$

3. Solve for r:

$$2r + \sqrt{(r+1)} = 8$$

4. Rewrite by completing the square: $x^2 + x + 1$

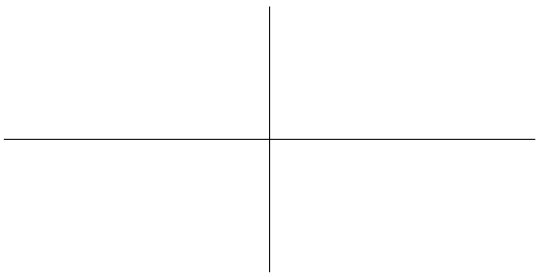
5. Find the value of $\csc(\theta)$:



6. Simplify as far as you can:

$$\ln(8e^4) - \ln(4e)$$

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:

$$3^x = 16$$

9. If $f(s) = 2s^4 + 7s^3 - 4s + 2$, find $f'(s)$.

10. If $g(t) = \dfrac{1}{t}$, find $g'(t)$.

11. If $f(x) = \ln(2x)$, find $f'(x)$.

12. If $y = \cos^3(\theta)$, find $dy/d\theta$.

13. Find the derivative of

$$f(t) = \sqrt{t}(1 + e^t)$$

14. Find the derivative of

$$w(s) = \frac{5 + s^2}{3 + s}$$

15. Find the derivative of

$$f(x) = \frac{x^2}{\ln(x)}$$

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

$$f'(x) = x + e^x$$

17. Evaluate the indefinite integral:

$$\int \sin(3x)\, dx$$

18. Evaluate the indefinite integral:

$$\int e^r \sqrt{e^r + 3}\, dr$$

19. Evaluate the definite integral:

$$\int_{-1}^{1} t^2\, dt$$

20. Evaluate the definite integral:

$$\int_0^1 s^{9/4}\, ds$$