Calculus ABC Test II—Version 4193 **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 between the points $(1, 1)$ and $(2, 4)$ in *slope-intercept* form.

2. Find the value of:

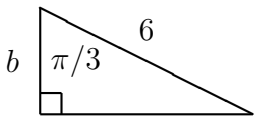
$$\arccos\left(\frac{\sqrt{3}}{2}\right)$$

3. Solve for x:

$$\frac{1}{x-1} + \frac{1}{x+2} = \frac{5}{4}$$

4. Rewrite by completing the square: $x^2 - 5x + 3$

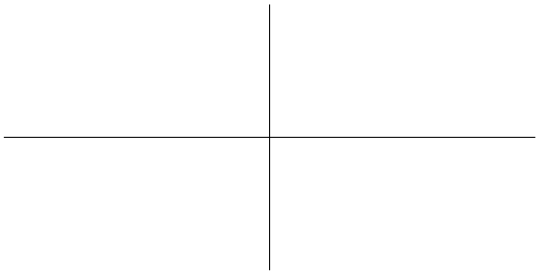
5. Find the value of b:



6. Simplify as far as you can:

$$e^{1+4\ln(5)}$$

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:

$$10^{2x} = 5$$

9. If $f(t) = 4t^3 + 2t^2 + 8t - 3$, find $f'(t)$.

10. If $y = \sin(\theta)$, find $dy/d\theta$.

11. If $y = \sin^5(x)$, find dy/dx.

12. If $h(x) = 5\cos(x^3)$, find $h'(x)$.

13. Find the derivative of

$$f(\theta) = \theta \sin(\theta)$$

14. Find the derivative of

$$f(\theta) = \frac{\sin(\theta)}{\theta}$$

15. Find the derivative of

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

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

$$f'(x) = 4e^x - \cos(x)$$

17. Evaluate the indefinite integral:

$$\int (2t + 3)^{10}\, dt$$

18. Evaluate the indefinite integral:

$$\int 2\theta \cos(\theta^2 + 5)\, d\theta$$

19. Evaluate the definite integral:

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

20. Evaluate the definite integral:

$$\int_0^{\pi/4} \sin(2\theta)\, d\theta$$