Calculus ABC Test II—Version 4098 **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 $(1, -2)$ and $(4, 6)$ in *point-slope* form.

2. Find the value of:

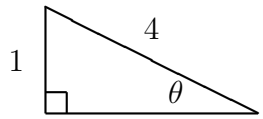
$$\arccos\left(\frac{1}{2}\right)$$

3. Solve for x:

$$x^2 + 5x = 24$$

4. Rewrite by completing the square: $8x - x^2$

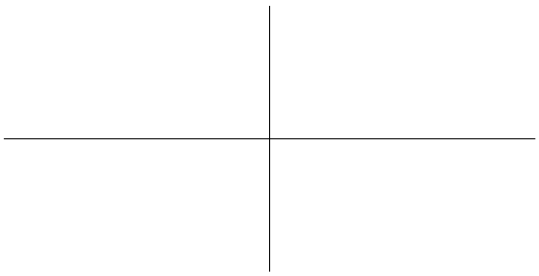
5. Find the value of $\cos(\theta)$:



6. Solve for x:

$$\ln(x) = 10$$

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. Simplify and eliminate any negative exponents:

$$\frac{y^{-7}}{y^4}$$

9. If $f(s) = 4s^3 + 2s^2 - 5s + 6$, find $f'(s)$.

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

11. If $y = \tan^2(x)$, find dy/dx.

12. If $g(\theta) = \tan(\theta^2 + \theta)$, find $g'(\theta)$.

13. Find the derivative of

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

14. Find the derivative of

$$f(x) = \frac{\sqrt{x}}{x^2 + 1}$$

15. Find the derivative of

$$f(t) = \frac{t}{e^t}$$

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

$$f'(t) = \cos(t) - \frac{1}{t}$$

17. Evaluate the indefinite integral:

$$\int \cos(3\theta + 1)\, d\theta$$

18. Evaluate the indefinite integral:

$$\int 3x^2 e^{x^3}\, dx$$

19. Evaluate the definite integral:

$$\int_1^2 (2x^2 + 1)\, dx$$

20. Evaluate the definite integral:

$$\int_1^2 t^{2/3}\, dt$$