Calculus ABC Test II—Version 2256 **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 *slope-intercept* form.

2. Find the value of:

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

3. Solve for t:

$$7t - 4 = 3t + 8$$

4. Rewrite by completing the square: $s^2 - 7s$

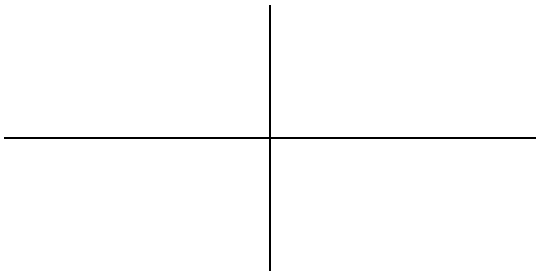
5. Find the value of:

$$\tan\left(\frac{\pi}{3}\right)$$

6. Simplify as far as you can:

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

7. Graph the function $y = e^{-x}$.
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:

$$\frac{(x^2y^3)^4(xy^4)^{-3}}{x^2y}$$

9. If $f(t) = 4t^3 - 5t^2 + 8t + 2$, find $f'(t)$.

10. If $y = e^x$, find dy/dx.

11. If $f(t) = \ln(3t^2)$, find $f'(t)$.

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

13. Find the derivative of

$$f(x) = x \ln(x)$$

14. Find the derivative of

$$g(y) = \frac{e^y}{\sqrt{y}}$$

15. Find the derivative of

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

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

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

17. Evaluate the indefinite integral:

$$\int (3 - x)^5 \, dx$$

18. Evaluate the indefinite integral:

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

19. Evaluate the definite integral:

$$\int_{-1}^{2} (3x - x^2) \, dx$$

20. Evaluate the definite integral:

$$\int_0^1 \frac{1}{e^x} \, dx$$