Calculus ABC Test II—Version 3806   **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:
$$\arcsin\left(-\frac{\sqrt{3}}{2}\right)$$

3. Solve for r:
$$\sqrt{r+3} - 8 = 0$$

4. Rewrite by completing the square: $x^2 + 6x + 4$
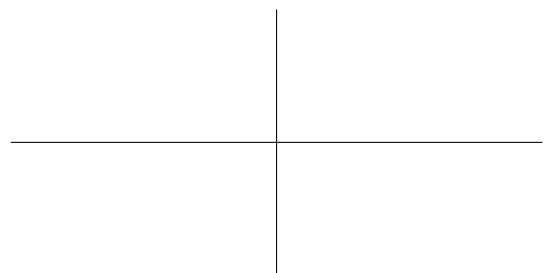
5. Find the value of:
$$\arctan(-1)$$

6. Solve for x:
$$2\ln(2x) - \ln(4x) = \ln(3)$$

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. Solve for x (write answer as a rational number):
$$16^x = \frac{1}{8}$$

9. If $f(s) = 3s^4 - 5s^2 - 3s + 7$, find $f'(s)$.

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

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

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

13. Find the derivative of

$$F(x) = x^5 \ln(x)$$

14. Find the derivative of

$$g(x) = \frac{x^3 + 2}{\tan(x)}$$

15. Find the derivative of

$$h(x) = \frac{\cos(x)}{1 - x}$$

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

$$f'(t) = 5t + e^t$$

17. Evaluate the indefinite integral:

$$\int \sin(3\theta + 2)\, d\theta$$

18. Evaluate the indefinite integral:

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

19. Evaluate the definite integral:

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

20. Evaluate the definite integral:

$$\int_{1}^{2} e^{-x}\, dx$$