Calculus ABC Test II—Version 7570 **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 with x-intercept -3 and y-intercept -1 in *point-slope* form.

2. Find the value of:

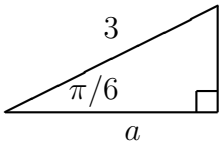
$$\arcsin\left(\frac{\sqrt{2}}{2}\right)$$

3. Solve for r:

$$\frac{r+5}{r-2} = 3$$

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

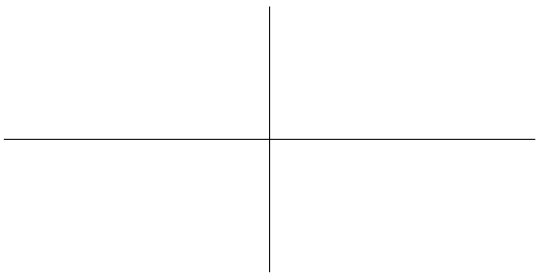
5. Find the value of a:



6. Solve for t:

$$e^{3t} - 4^9 = 0$$

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 t (write answer as a rational number):

$$\left(\frac{1}{10}\right)^{5-2t} = 100$$

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

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

11. If $f(\theta) = \ln(\sin(\theta))$, find $f'(\theta)$.

12. If $y = \sqrt{\tan(x)}$, find dy/dx.

13. Find the derivative of

$$g(\theta) = (1 - \theta^2)\sin(\theta)$$

14. Find the derivative of

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

15. Find the derivative of

$$g(s) = \frac{s^2}{s + 1}$$

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

$$f'(t) = 4e^t - \sin(t)$$

17. Evaluate the indefinite integral:

$$\int (3 - 2x)^{10}\, dx$$

18. Evaluate the indefinite integral:

$$\int 2t\sin(t^2 + 5)\, dt$$

19. Evaluate the definite integral:

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

20. Evaluate the definite integral:

$$\int_{1}^{4} \frac{3}{t}\, dt$$