Calculus ABC Test II—Version 220   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 through the point (-2,4) with slope -1 in *slope-intercept* form.

2. Find the value of:

$$\arctan(0)$$

3. Solve for x:
$$\sqrt{2x+2} - 6 = 0$$

4. Rewrite by completing the square: $z^2 + 22z + 21$
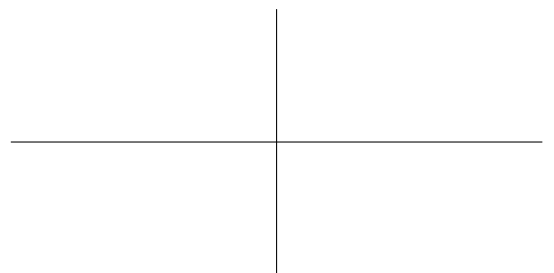
5. Find the value of:

$$\tan\left(\frac{7\pi}{4}\right)$$

6. Simplify as far as you can:

$$e^{2\ln(3)}$$

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:
$$\left(\frac{1}{4}\right)^x = 75$$

9. If $f(x) = 5x^4 + 3x^3 - 7x + 8$, find $f'(x)$.

10. If $y = \sqrt{x}$, find dy/dx.

11. If $f(r) = \sin(\sqrt{x})$, find $f'(r)$.

12. If $y = \sqrt{x^2 + 1}$, find dy/dx.

13. Find the derivative of

$$g(\theta) = \theta^2 \tan(\theta)$$

14. Find the derivative of

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

15. Find the derivative of

$$h(t) = \frac{\sqrt{t}}{t + 1}$$

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

$$f'(x) = 3e^x + 2$$

17. Evaluate the indefinite integral:

$$\int e^{3r} \, dr$$

18. Evaluate the indefinite integral:

$$\int 3t^2 \cos(t^3) \, dt$$

19. Evaluate the definite integral:

$$\int_{-1}^{2} (3x + 4) \, dx$$

20. Evaluate the definite integral:

$$\int_{0}^{1} \frac{1}{e^x} \, dx$$