Calculus ABC Test II—Version 7288   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 $(-1, 0)$ and $(-2, 5)$ in *point-slope* form.

2. Find the value of:
$$\arctan\left(-\frac{1}{\sqrt{3}}\right)$$

3. Solve for y:
$$\frac{6y - 2}{2} = y + 5$$

4. Rewrite by completing the square: $8x - x^2$
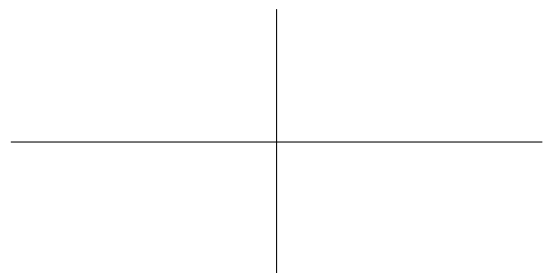
5. Find the value of:
$$\arccos\left(-\frac{1}{2}\right)$$

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:
$$3^x = 16$$

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

10. If $g(t) = \sqrt{t}$, find $g'(t)$.

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

12. If $y = (3x - 5)^8$, find dy/dx.

13. Find the derivative of

$$f(\theta) = \theta^4 \cos(\theta)$$

14. Find the derivative of

$$h(s) = \frac{s^2}{e^s}$$

15. Find the derivative of

$$f(\theta) = \frac{1 - \theta}{\cos(\theta)}$$

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

$$f'(t) = \frac{2}{t} + \sin(t)$$

17. Evaluate the indefinite integral:

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

18. Evaluate the indefinite integral:

$$\int t e^{t^2 + 1}\, dt$$

19. Evaluate the definite integral:

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

20. Evaluate the definite integral:

$$\int_{-\pi/2}^{\pi/2} \cos(2x)\, dx$$