

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  $(-1,7)$  with slope 2 in *slope-intercept* form.

2. Find the value of:

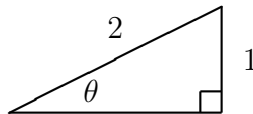
$$\arctan(-1)$$

3. Solve for  $t$ :

$$5 + \frac{2}{t} = 1$$

4. Rewrite by completing the square:  $4x^2 - 10x + 5$

5. Find the value of  $\cot(\theta)$ :

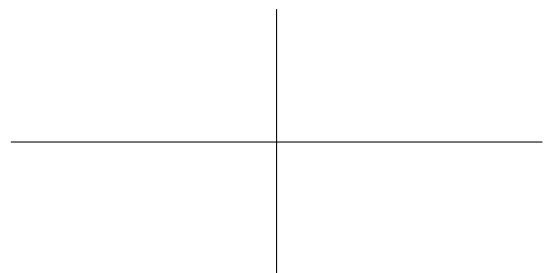


6. Simplify as far as you can:

$$\ln(5a^2) - \ln(10a)$$

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):

$$9^{2x-1} = 3$$

9. If  $f(t) = 4t^3 - 7t^2 + 10t - 19$ , find  $f'(t)$ .

10. If  $y = x^{-4/3}$ , find  $dy/dx$ .

11. If  $g(y) = e^{1-y}$ , find  $g'(y)$ .

12. If  $f(x) = 3 \tan(x + 1)$ , find  $f'(x)$ .

13. Find the derivative of

$$f(x) = x^{4/3} e^x$$

14. Find the derivative of

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

15. Find the derivative of

$$f(x) = \frac{x}{\sin(x)}$$

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

$$f'(x) = \sin(x) + \frac{1}{x}$$

17. Evaluate the indefinite integral:

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

18. Evaluate the indefinite integral:

$$\int e^t \sin(e^t) dt$$

19. Evaluate the definite integral:

$$\int_0^3 (5 - 2x) dx$$

20. Evaluate the definite integral:

$$\int_1^3 \frac{1}{x^2} dx$$