

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 $(1, -2)$ and $(4, 6)$ in *point-slope* form.

2. Find the value of:

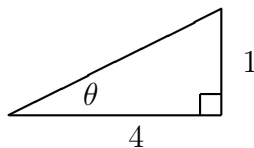
$$\arccos\left(\frac{\sqrt{2}}{2}\right)$$

3. Solve for x :

$$x^2 + 5x = 24$$

4. Rewrite by completing the square: $3t^2 - 12t + 6$

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

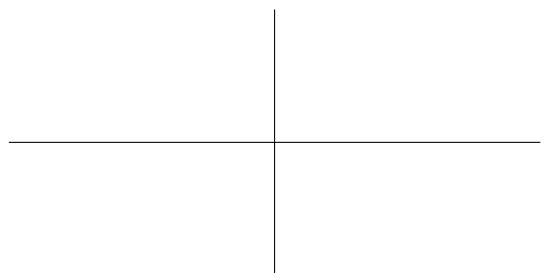


6. Solve for r :

$$e^{5r^2} - 2 = 0$$

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. Simplify:

$$(x^2)^3$$

9. If $f(x) = 6x^5 + 2x^3 - 7x - 3$, find $f'(x)$.

10. If $g(t) = \frac{1}{t}$, find $g'(t)$.

11. If $h(t) = 5 \sin(e^t)$, find $h'(t)$.

12. If $f(\theta) = e^{\cos(\theta)}$, find $f'(\theta)$.

13. Find the derivative of

$$h(\theta) = \theta^3 \tan(\theta)$$

14. Find the derivative of

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

15. Find the derivative of

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

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

$$f'(x) = 5 \cos(x) + x^{3/2}$$

17. Evaluate the indefinite integral:

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

18. Evaluate the indefinite integral:

$$\int x \sin(x^2 + 1) dx$$

19. Evaluate the definite integral:

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

20. Evaluate the definite integral:

$$\int_0^5 \sqrt{y} dy$$