

1. Differentiate the function  $f(x) = 3e^9$
2. Differentiate the function  $f(x) = 2x^3 - \sqrt{x}$
3. Differentiate the function  $f(x) = \frac{x^3 + 7x^2}{\sqrt[3]{x}}$
4. Differentiate the function  $f(x) = 5e^x - 7x^{10}$
5. Differentiate the function  $f(x) = x^e - e^x$
6. Find an equation of the tangent line to the curve  $y = e^x - 3x^2 + 1$  at the point  $(0, 2)$
7. Find an equation of the tangent line to the curve  $y = \frac{x^3 - 8x^2}{\sqrt{x}}$  when  $x = 4$
8. Find an equation of the tangent line to the curve  $y = 2e^x - 3x^e$  that is parallel to the line  $y = 2x + 7$
9. Find an equation of the tangent line to the curve  $y = x^5 - 2\sqrt{x}$  that is parallel to the line  $2y - 8x = 3$
10. Find all points on the curve  $y = 2x^3 - 3x^2 - 12x + 7$  where the tangent line is horizontal