

1. What is the slope of the line tangent to the graph of $y = \frac{e^{-x}}{x+1}$ at $x=1$?
2. Find the equation of the tangent line to $f(x) = (2x-1)^4(x+3)$ when $x=0$.
3. If $f(x) = \cos^3(4x)$, then $f'(x) =$
4. $\lim_{h \rightarrow 0} \frac{e^{(x+h)} - e^x}{h} =$
5. For the function f , $f'(x) = 2x+1$ and $f(1) = 4$. What is the approximation for $f(1.2)$ found by using the line tangent to the graph of f at $x=1$?
6. If $x^2y - 3x = y^3 - 3$, then at the point $(-1, 2)$, $\frac{dy}{dx} =$
7. $y = \arcsin(5x)$, then $\frac{dy}{dx} =$
8. If $y = x \sin x$, then $\frac{dy}{dx} =$
9. If $y = (x^3 - \cos x)^5$, then $y' =$
10. If $f(x) = \sqrt{x^2 - 4}$ and $g(x) = 3x - 2$, then the derivative of $f(g(x))$ at $x=3$ is
11. The function f is defined by $f(x) = \frac{x}{x+2}$. Find points (x, y) on the graph of f that the line tangent to f at (x, y) has slope $\frac{1}{2}$?
12. If $x^2 - 2xy + 3y^2 = 8$, then show that $\frac{dy}{dx} = \frac{y-x}{3y-x}$.
13. An equation of the line normal to the graph of $y = \sqrt{3x^2 + 2x}$ at $(2, 4)$ is