Section 3.5: Additional Problems

1. Find the equation of the tangent line at the point $(1, -2)$ for the graph of

   $$y^4 + 3y - 4x^3 = 5x + 1$$

2. Compute $\frac{dy}{dx}$ for $y^5 - 3x^2y^3 + 5x^4 = 12$

3. Compute $\dfrac{dy}{dx}$. $\sin(2y)e^{x^2} = \cos(x^3 + y^2)$

4. If the tangent lines to the ellipse $9x^2 + 4y^2 = 36$ intersects the $y-$axis at the point $(6, 0)$, find the points of tangency (i.e. the points where the tangent line intersects the ellipse.