MATH 2250 WORKSHEET 20220926
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Problem 1. Calculate derivatives / higher-order derivatives.

1. $(2\sin(x^3+x)+x)' =$

2. $((\sin^4 x + x - 1)^{100})' =$

3. $(\cos(\frac{\sin x}{x^3-1}))' =$

4. $(\sqrt{x^2+1})''' =$

5. $(\sin(x^2))''' =$

6. $(\cos(2x))^{(31)} =$

Problem 2. Find the tangent line to the graph of $x^3 + xy - y^2 - y^4 = -2$ at $(1, -1)$.

Problem 3. Find $\frac{\mathrm{d}y}{\mathrm{d}x}$, $\frac{\mathrm{d}^2y}{\mathrm{d}x^2}$ for the following implicit functions $y(x)$.

$$(1) \qquad x^2 + xy + y^3 = 1$$

$$(2) \qquad 2x^4 + xy^2 + \cos(y^2) = 1$$