MATH 2250 WORKSHEET 20221017
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Problem 1. A cone-shaped water tank is opening up and water is filling into it at a rate of $10\text{m}^3/\text{s}$. Its height is 3m and bottom radius is 2m. When the area of the water surface is 1m^2, how fast is the area of the water surface increasing? (Given volume of a cone $V = \frac{1}{3}\pi r^2 h$ where r is bottom radius and h is height)
(Hint: consider the cone formed by water. Its bottom radius and height are related by using similar triangles)

Problem 2. Sketch the graph of $f(x) = x^4 - x^2$.

Problem 3. Sketch the graph of $f(x) = \frac{x^2}{x-1}$.