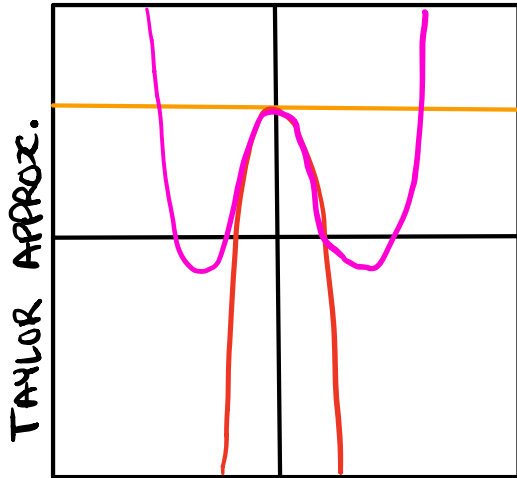


PROBLEM #1.

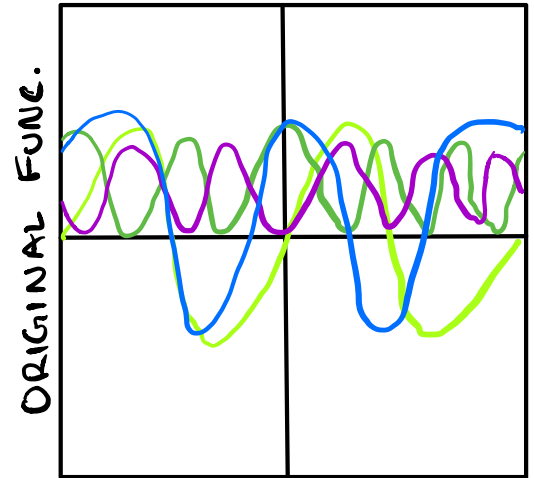
Given these functions - approximations formed with the Taylor Series select the plot best represented by these approximations.



$$f_0(x) = 1$$

$$f_1(x) = 1 - \frac{x^2}{2} + \frac{x^4}{24}$$

$$f_2(x) = 1 - \frac{x^2}{2}$$



☐ $f(x) = \sin(x)$

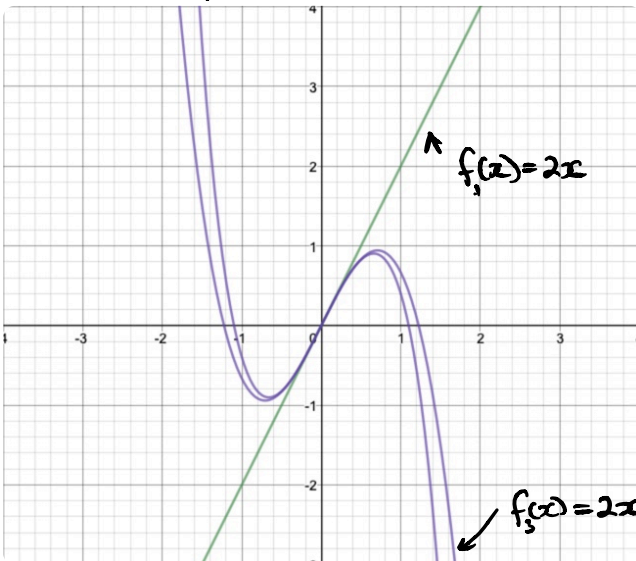
☐ $f(x) = \cos^2(x)$

☐ $f(x) = \sin^2(x)$

☒ $f(x) = \cos(x)$

PROBLEM #2.

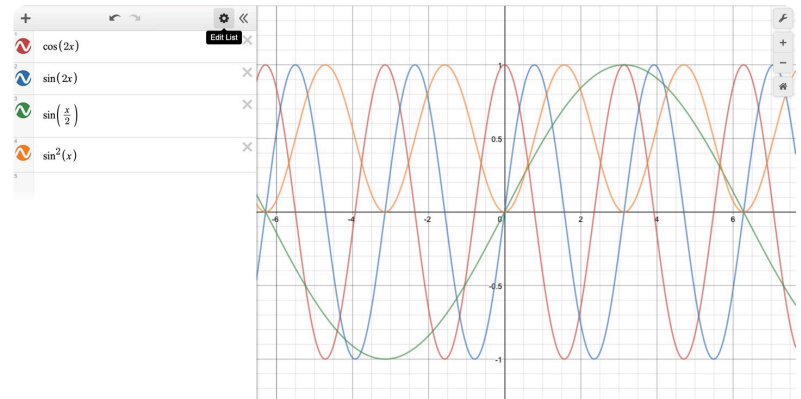
$$f_5(x) = 2x - \frac{4x^3}{3} - \frac{4x^5}{15}$$



$$f_1(x) = 2x$$

$$f_3(x) = 2x - \frac{4x^3}{3}$$

Taylor Series Approx.



Original Functions

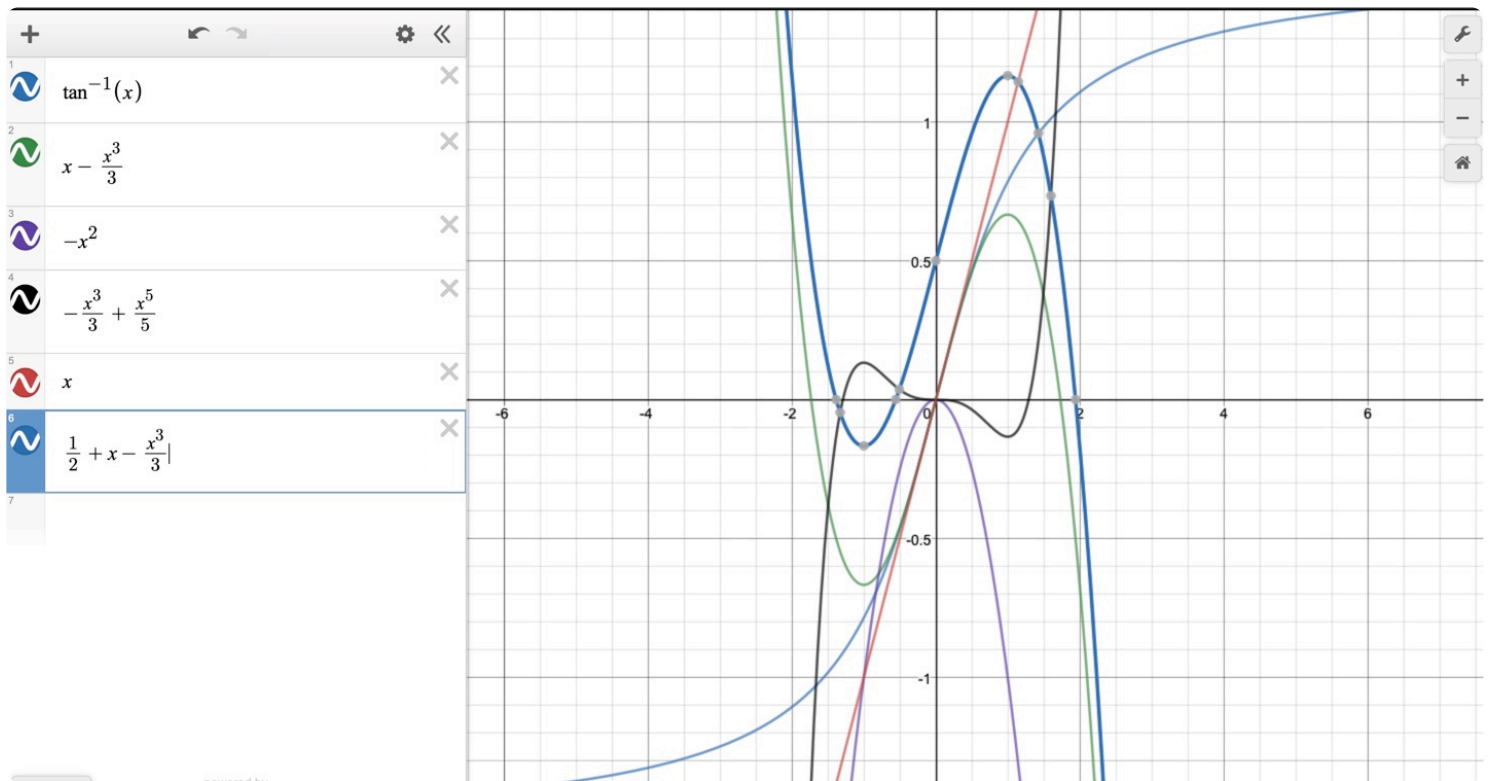
☐ $\cos(2x)$

☒ $\sin(2x)$

☐ $\sin(x/2)$

☐ $\sin^2(x)$

PROBLEM #3.



Which of these functions can be used to approximate $f(x) = \tan^{-1}(x)$

☒ $f_3(x) = -\frac{x^3}{3} + x$

☐ $f_2(x) = -x^2$

☐ $f_5(x) = \frac{x^5}{5} - \frac{x^3}{3}$

☒ $f_1(x) = x$

☐ $f_3(x) = -\frac{x^3}{3} + x + \frac{1}{2}$

PROBLEM #4.

If the function to model is $f(x) = \sin x$, and the Taylor Series approximation is $f(x) = x - \frac{x^3}{6}$, which order is the model

☐ Zeroth order

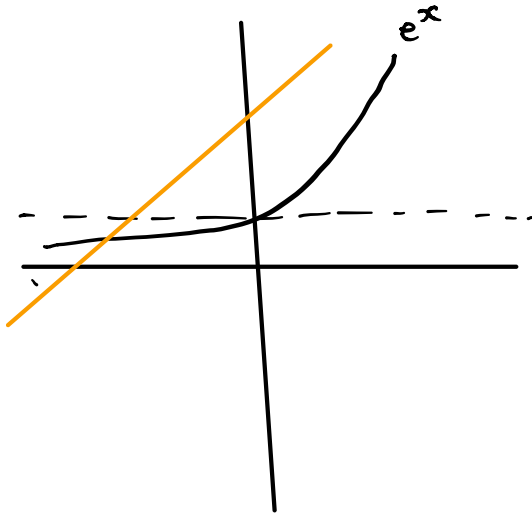
☐ First order

☒ Third order

☐ Fifth order

☐ none of the above

PROBLEM #5.



Is the line an approximation of the euler exponential?

If it is what is it's approximation order?

☐ first

☐ third

☐ second

☒ not a correct approx.