Numerical Methods I
Quiz #2 Tips

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Quiz #2

1 Picard Iterate

$$y_{n+1} = y_0 + \int_{x_0}^{x} f(t, y_n(t)) \ dt \qquad (1)$$

2 Taylor Approximating Polynomial

$$p_3(x) = y(x_0) + y'(x_0)(x - x_0) + \frac{y''(x_0)}{2!}(x - x_0)^2 + \frac{y'''(x_0)}{3!}(x - x_0)^3 \qquad (2)$$

3 Euler's Method

$$y_{n+1} = y_n + hf(x_n, y_n) \qquad \qquad x_n = x_0 + nh \qquad (3)$$

4 Modified Euler's Method

$$k_1 = hf(x_n, y_n) \qquad (4)$$
$$k_2 = hf(x_n + h, y_n + k_1)) \qquad (5)$$
$$y_{n+1} = y_n + \frac{1}{2}(k_1 + k_2) \qquad (6)$$