

Date: ___ / ___ / ___

$$1. \quad f(x) = 0.9x^3 - 1.4x^2 + 3x - 4$$

$$f'(x) = 2.7x^2 - 2.8x + 3$$

$$f''(x) = 5.4x - 2.8$$

$$f'''(x) = 5.4$$

$$f(0.4) = -2.9664$$

$$f'(0.4) = 2.372$$

$$f''(0.4) = -0.64$$

$$f'''(0.4) = 5.4$$

$$f(x) \approx -2.9664 + 2.372(x - 0.4) - 0.32 \\ (x - 0.4)^2 + \frac{5.4}{6} (x - 0.4)^3$$

$$f(0.5) \approx -2.9664 + 0.2372 - 0.0032 \\ + 0.009$$

$$f(0.5) \approx -2.7294$$

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2.

$$f(x) = 1.4e^x - 3.2x + 3.2 \quad x=0.5$$

$$f(0.5) = 3.90818$$

$$f'(0.5) = -0.89182$$

$$f''(0.5) = 2.30818$$

$$f'''(0.5) = 2.30818$$

$$f(x) \approx 3.90818 - 0.89182(x-0.5) + \frac{2.30818}{2!}$$

$$(x-0.5)^2 + \frac{2.30818}{3!} (x-0.5)^3$$

$$f(0.55) \approx 3.90818 - 0.89182(0.05) + \frac{2.30818}{2}$$

$$(0.05)^2 + \frac{2.30818}{6} (0.05)^3$$

$$f(0.55) \approx 3.86683545$$