

8.8

Homework #3, 5, 7

#3

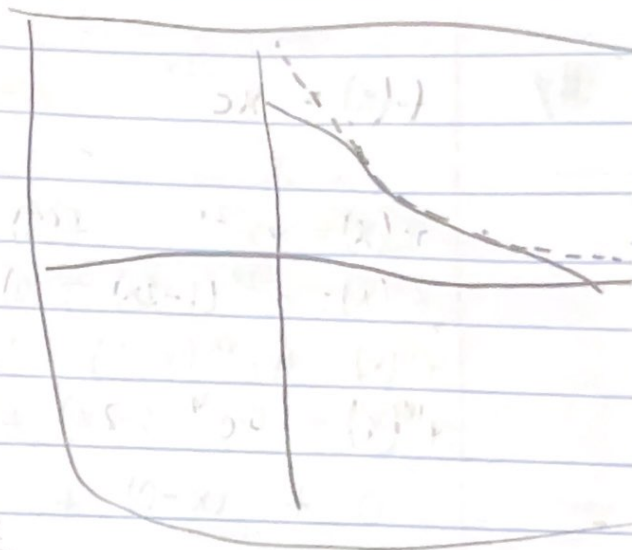
$$f(x) = \frac{1}{x} \quad a=2$$

$$f(x) = \frac{1}{x} \quad f(2) = \frac{1}{2}$$

$$f'(x) = -\frac{1}{x^2} \quad f'(2) = -\frac{1}{4}$$

$$f''(x) = \frac{2}{x^3} \quad f''(2) = \frac{1}{4}$$

$$f'''(x) = -\frac{6}{x^4} \quad f'''(2) = -\frac{3}{8}$$



$$\frac{f(2) \cdot (x-2)^0}{0!} + \frac{f'(2) \cdot (x-2)^1}{1!} + \frac{f''(2) \cdot (x-2)^2}{2!} + \frac{f'''(2) \cdot (x-2)^3}{3!}$$

$$\left[\frac{1}{2} - \frac{(x-2)}{4} + \frac{(x-2)^2}{8} - \frac{(x-2)^3}{16} \right]$$

#5

$$f(x) = \cos x \quad a = \frac{\pi}{2}$$

$$f(x) = \cos x$$

$$f(a) = \cos \frac{\pi}{2} = 0$$

$$f'(x) = -\sin x$$

$$f'(a) = -\sin \frac{\pi}{2} = -1$$

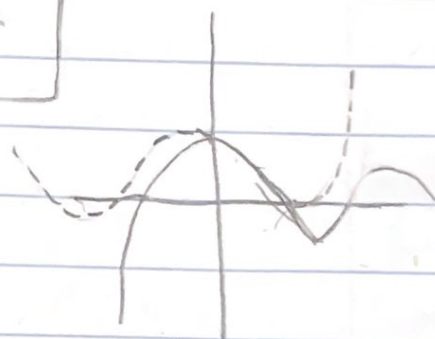
$$f''(x) = -\cos x$$

$$f''(a) = -\cos \frac{\pi}{2} = 0$$

$$f'''(x) = \sin x$$

$$f'''(a) = \sin \frac{\pi}{2} = 1$$

$$0 + \frac{-1 \cdot (x - \frac{\pi}{2})}{1!} + 0 + \frac{(x - \frac{\pi}{2})^3}{3!} - \frac{(x - \frac{\pi}{2})^5}{5!} + \frac{1}{6} (x - \frac{\pi}{2})^3$$



$$f(x)$$

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

$$f''(x) = \frac{2}{x^3}$$

$$f'''(x) = -\frac{6}{x^4}$$

$$f'(2) =$$

$$f''(2) =$$

$$\frac{f(2) \cdot f'(2)}{f'(2)}$$

8.8 Homework #7

#7 $f(x) = xe^{-2x}$ $a=0$

$f(x) = xe^{-2x}$ $f(0) = 0$

$f'(x) = e^{-2x}(1-2x)$ $f'(0) = 1$

$f''(x) = 4e^{-2x}(x-1)$ $f''(0) = -4$

$f'''(x) = 4e^{-2x}(3-2x)$ $f'''(0) = 12$

$$0 + (x-0) + \frac{-4}{2!}(x-0)^2 + \frac{12}{3!}(x-0)^3$$

$$x + \frac{4}{2}x^2 + \frac{12}{6}x^3 = x + 2x^2 + 2x^3$$

