Section 10

(7) $f(x) = \cos x \quad f(-4\pi/3) = -1/2$

$f'(x) = -\sin x \quad f'(-4\pi/3) = +\sqrt{3}/2$

$f''(x) = -\cos x \quad f''(-4\pi/3) = +1/2$

$f'''(x) = +\sin x \quad f'''(-4\pi/3) = -\sqrt{3}/2$

$$-\frac{1}{2} + \frac{\sqrt{3}}{2}(x+4\pi/3) + \frac{1}{2}\cdot\frac{1}{2}(x+4\pi/3)^2 - \frac{\sqrt{3}}{2}\cdot\frac{1}{3!}(x+\tfrac{4\pi}{3})^3 + \cdots$$

(8) $f(x) = e^x \quad f(e) = e^e$

$f'(x) = e^x \quad f'(e) = e^e$

$f''(x) = e^x \quad f''(e) = e^e$

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

$$\sum_{n=0}^{\infty} \frac{e^e(x-e)^n}{n!} \quad \checkmark$$

(11) $f(x) = xe^x$

$$\sum_{n=0}^{\infty} \frac{x^{n+1}}{n!}$$

(15) $f(x) = x^{1/3}$ $x = 8$

$f'(x) = \frac{1}{3} x^{-2/3}$

$f(8) = 2$

$f'(8) = \frac{1}{3 \cdot 4_{2^2}} = \frac{1}{12}$

5½

[redacted]