16. $F(x) = x^5 + x - 1$

$F'(x) = 5x^4 + 1$

Let $x_1 = 1$

$$x_{n+1} = x_n - \frac{f(x_n)}{f'(x_n)}$$

$x_2 = .833$

$x_3 = .764$

$x_4 = .755$

$x_5 = .755$

$f(x) = x - 2\sqrt{x+1}$

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

$f'(x) = 1 - \frac{1}{\sqrt{x+1}}$

Let $x_1 = 5$

$x_2 = 4.829$

$x_3 = 4.828$

17. $(2.99)^3$

$F(x) = x^3$

$x = 3$

$\Delta x = -.01$

$\frac{dy}{dx} = 3x^2$

$dy = 3x^2\,dx$

$dy = 3(3)^2(-.01)$

$dy = -.27$

$(2.99)^3 = 3^3 + -.27$

$= 26.73$

$\frac{1}{\frac{\sqrt{2}}{2}}$

$\frac{2}{\sqrt{2}}$

☆ $\tan 47°$

$f(x) = \tan x$

$x = 45° \Rightarrow \pi/4$

$\Delta x = 2° \Rightarrow \pi/90$

$\frac{dy}{dx} = \sec^2 x$

$dy = \sec^2 x\,dx$

$dy = \sec^2(\pi/4) \cdot \pi/90$

$= \left(\frac{2}{\sqrt{2}}\right)^2 \cdot \frac{\pi}{90}$

$= 2 \cdot \frac{\pi}{90}$

$dy = \frac{\pi}{45}$

$\tan 47° = \tan 45° + \pi/45$

$= 1 + \frac{\pi}{45}$