

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

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

$$\text{let } x_1 = 1$$

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

$$x_2 = .823$$

$$x_3 = .784$$

$$x_4 = .755$$

$$x_5 = .755$$

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

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

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

$$\text{let } x_1 = 5$$

$$x_2 = 4.829$$

$$x_3 = 4.828$$

$$17. (2.99)^3$$

$$f(x) = x^3$$

$$x = 3$$

$$\Delta x = -.01$$

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

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

$$\frac{dy}{dx} = 3(3)^2(-.01)$$

$$\frac{dy}{dx} = -.27$$

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

$$= 26.73$$

$$\star \tan 47^\circ$$

$$f(x) = \tan x$$

$$x = 45^\circ \Rightarrow \frac{\pi}{4}$$

$$\Delta x = 2^\circ \Rightarrow \frac{\pi}{90}$$

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

$$\frac{dy}{dx} = \sec^2(\frac{\pi}{4})$$

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

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

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

$$\tan 47^\circ = \tan 45^\circ + \frac{\pi}{45}$$

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

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

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