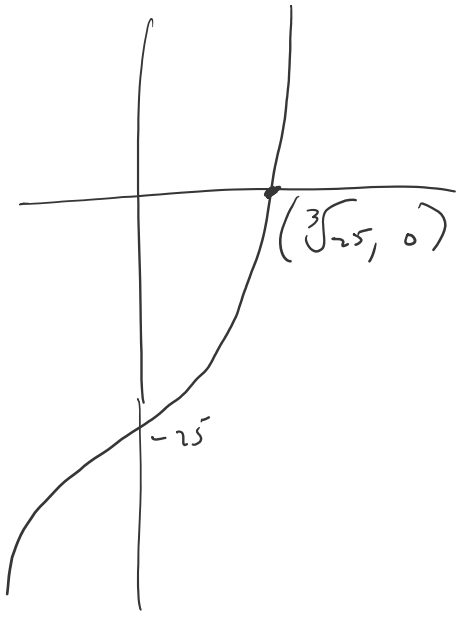
(7) $\sqrt[3]{25}$



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

$f(x) = x^3 - 25$

$f(\sqrt[3]{25}) = (\sqrt[3]{25})^3 - 25 = 0$

$f(3) = 2 \qquad f'(x) = 3x^2$

$x_2 = 3 - \frac{2}{18} = 2.\overline{8}$

$x_3 = 2.\overline{8} - \frac{(2.\overline{8})^3 - 25}{3(2.\overline{8})^2}$

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(11) $p(x) = e^{-x^2/2}$ $\quad a = 1$

$p(1) = e^{-1/2}$ $\quad p'(x) = e^{-x^2/2}(-x)$

$p'(1) = -e^{-1/2}$

$y - e^{-1/2} = (-e^{-1/2})(x-1)$

(29) $g(\theta) = \sin^2\theta - \cos\theta \quad [0, 2\pi)$

$g(0) = -1 \qquad g(2\pi) = -1$

$g'(\theta) = 2\sin\theta\cos\theta + \sin\theta = 0$

$\sin\theta(2\cos\theta + 1) = 0$

$\sin\theta = 0 \qquad 2\cos\theta + 1 = 0$

$\theta = 0, \pi, 2\pi \qquad \cos\theta = -1/2$

$\theta = 2\pi/3, 4\pi/3$

$g''(\theta) = \cos\theta(2\cos\theta + 1) + \sin\theta(-2\sin\theta)$

$= 2\cos^2\theta + \cos\theta - 2\sin^2\theta$

$g''(0) = 2 + 1 - 0 = 3$ (MIN)

$g''(\pi) = 2 - 1 - 0 = 1$ (MIN)

$g''(2\pi) = 3$ (MIN)

$g''(2\pi/3) = 2\left(\frac{1}{4}\right) - \frac{1}{2} - 2\left(\frac{\sqrt{3}}{2}\right)^2 < 0$ (MAX)

$g''(4\pi/3) = 2\left(\frac{1}{4}\right) - \frac{1}{2} - 2\left(-\frac{\sqrt{3}}{2}\right)^2 < 0$ (MAX)

$g(\theta) = \sin^2\theta - \cos\theta$

$g(\pi) = 1$

$g(2\pi/3) = \frac{3}{4} - -\frac{1}{2} = \frac{5}{4}$ —

$g(4\pi/3) = \frac{3}{4} - -\frac{1}{2} = \frac{5}{4}$ —

(42) $f(x) = x(\ln x)^2$

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

$= 2\ln x + (\ln x)^2$

$f''(x) = \frac{2}{x} + \frac{2\ln x}{x} = 0$

$\frac{2}{x}(1 + \ln x) = 0$

$1 + \ln x = 0 \qquad \ln x = -1$

$e^{-1} = x = \frac{1}{e}$ is POI

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(86) $\int \tan 3\theta \sec 3\theta \, d\theta =$

$\frac{1}{3} \sec 3\theta$