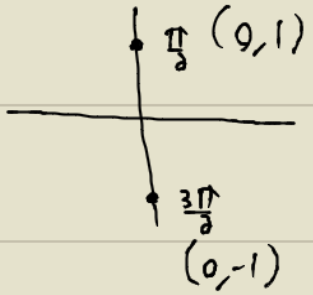
11. $f(x) = \cos x \quad \underset{a}{\left[\frac{\pi}{2}\right.}, \underset{b}{\left.\frac{3\pi}{2}\right]}$

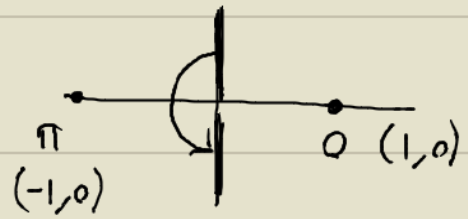


① $f'(x) = -\sin x$

② $f(b) = f\left(\frac{3\pi}{2}\right) = \cos\left(\frac{3\pi}{2}\right) = 0$

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

$\frac{f(b) - f(a)}{b - a} = \frac{0 - 0}{\frac{3\pi}{2} - \frac{\pi}{2}} = 0$



③ $-\sin x = 0$

$\sin x = 0$

$x = -\pi \quad x = 0 \quad \boxed{x = \pi} \quad x = 2\pi$

12. $f(x) = e^{5x} \quad \underset{a}{\left[0,\right.} \underset{b}{\left.3\right]}$

① $f'(x) = e^{5x} \cdot \frac{d}{dx}(5x)$

$= 5e^{5x}$

② $f(b) = f(3) = e^{5(3)} = e^{15}$

$f(a) = f(0) = e^{5(0)} = 1$

$\frac{f(b) - f(a)}{b - a} = \frac{e^{15} - 1}{3 - 0} = \frac{e^{15} - 1}{3}$

③ $5e^{5x} = \frac{e^{15} - 1}{3}$

$\frac{1}{5} \cdot 5e^{5x} = \frac{1}{5} \cdot \frac{e^{15} - 1}{3}$

$e^{5x} = \frac{e^{15} - 1}{15}$

$\ln e^{5x} = \ln\left(\frac{e^{15} - 1}{15}\right)$

$5x = \ln\left(\frac{e^{15} - 1}{15}\right)$

$\frac{1}{5} \cdot 5x = \frac{1}{5} \ln\left(\frac{e^{15} - 1}{15}\right)$

$\boxed{x = \frac{1}{5} \ln\left(\frac{e^{15} - 1}{15}\right)}$