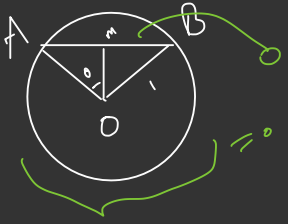
(1) - 11



longer Arc = 2 AB
radius = 1
Find $\overline{AB}$ --> 18 decimal places.

Arc length
$2\pi - 2\theta = 4\sin\theta$

$f(\theta) = 2\sin\theta + \theta - \pi$

$f'(\theta) = 2\cos\theta + 1$

$\theta_{n+1} = \theta_n - \dfrac{2\sin\theta_n + \theta_n - \pi}{2\cos\theta_n + 1}$

but $\pi - \theta = 2\sin\theta = 2\sin(\pi - \theta)$

$x = 2\sin x$
$x = 1.895494426$
$-.703398094$

(2) Find all solutions to
$5x + \ln x = 10000$ (4 decimal places)

Sol: Domain --> $x > 0$

$5 + \frac{1}{x} > 0$ => f inc

$f(1) < 0$
$f(2000) > 0$ --> 1998.4805

(3) --> I

your calculator can't do division
find the value of $1/1.37$? --> upto 8 places.

Sol: $a = 1.37$; $f(x) = a - \frac{1}{x}$ => $x_{n+1} = x_n - \dfrac{a - 1/x_n}{1/x_n^2}$

$= x_n - x_n^2(a - 1/x_n)$

$= x_n(2 - a x_n)$

(4)

$\tan x = 4x$ — 4 decimal places

Smallest & 2nd smallest non-zero roots

Start = $(\pi/2)$ → 1.3932

Start = 4.66 → 4.6588

$x_{n+1} = x_n - \dfrac{\tan x_n - 4x_n}{\tan^2 x_n - 3}$