$$Digits := 35$$

$$f := x \mapsto (\cos(x))^2 - x$$
$$a := 0$$
$$b := 1.0$$
$$err := \frac{1}{1000000}$$

$$d := 0.50000000000000000000000000000000000$$
$$d := 0.75000000000000000000000000000000000$$
$$d := 0.62500000000000000000000000000000000$$
$$d := 0.68750000000000000000000000000000000$$
$$d := 0.65625000000000000000000000000000000$$
$$d := 0.64062500000000000000000000000000000$$
$$d := 0.64843750000000000000000000000000000$$
$$d := 0.64453125000000000000000000000000000$$
$$d := 0.64257812500000000000000000000000000$$
$$d := 0.64160156250000000000000000000000000$$
$$d := 0.64208984375000000000000000000000000$$
$$d := 0.64184570312500000000000000000000000$$
$$d := 0.64172363281250000000000000000000000$$
$$d := 0.64166259765625000000000000000000000$$
$$d := 0.64169311523437500000000000000000000$$
$$d := 0.64170837402343750000000000000000000$$
$$d := 0.64171600341796875000000000000000000$$
$$d := 0.64171218872070312500000000000000000$$
$$d := 0.64171409606933593750000000000000000$$
$$d := 0.64171504974365234375000000000000000$$

$f(a)$

$$0.0000005383382853$$

$$f := x \mapsto x^2 - 2$$

$$p_0 := 2.0$$
$$p_1 := 3$$

$$p_2 := 1.60000000000000000000000000000000000$$
$$p_3 := 1.47826086956521739130434782608695652$$
$$p_4 := 1.41807909604519774011299435028248590$$
$$p_5 := 1.41429904164193028581121194131116950$$

$$
\begin{aligned}
p_{6} &:= 1.414213679032303631432775076029491 8 \\
p_{7} &:= 1.414213562376620556670065464019774 0 \\
p_{8} &:= 1.414213562373095048947099202427195 7 \\
p_{9} &:= 1.414213562373095048801688724209879 3 \\
p_{10} &:= 1.414213562373095048801688724209698 1 \\
p_{11} &:= 1.414213562373095048801688724209698 1
\end{aligned}
$$

$$
f := x \mapsto -3\,x^{5} + x^{3} - 12\,x^{2} + 6\,x + 11
$$

$$
x_{0} := 1.0
$$

$$
\begin{aligned}
x_{1} &:= 1.100000000 \\
x_{2} &:= 1.089142429 \\
x_{3} &:= 1.088991508 \\
x_{4} &:= 1.088991480 \\
x_{5} &:= 1.088991480 \\
x_{6} &:= 1.088991480 \\
x_{7} &:= 1.088991480 \\
x_{8} &:= 1.088991480 \\
x_{9} &:= 1.088991480 \\
x_{10} &:= 1.088991480 \\
x_{11} &:= 1.088991480
\end{aligned}
$$