Petroleum Engineering
ENG 382

Engr. Maths Assignment 1

1) $f(y) = \cos(y)$

$\cos(y) = 0$

$y = \cos y_i + y_i$

Using guess value of $y = 0.05$

$y_{i+1} = \cos(0.05) + 0.05$

$= 1.0500$

when $y_i = 1.0500$

$y_{i+1} = \cos(1.05) + 1.05$

$= 2.0498$

when $y_i = 2.0498$

$y_{i+1} = \cos(2.0498) + 2.0498$

$= 3.04916$

when $y_i = 3.04916$

$y_{i+1} = \cos(3.04916) + 3.04916$

$= 4.0477$

when $y_i = 4.0477$

$y_{i+1} = \cos(4.0477) + 4.0477$

$= 5.0452$

2) $f(z) = e^{-15z} - z + \cos(z)$

$= e^{-15z} - z + \cos(z) = 0$

$z = e^{-15z} + \cos(z)$

$z_{i+1} = e^{-15z_i} + \cos(z_i)$

Using the guess value of $z = 0.1$

$z_{i+1} = e^{-15(0.1)} + \cos(0.1) = 1.2331$

When $z_i = 1.2331$

$z_{i+1} = e^{-15(1.2331)} + 1.2331 = 0.9998$

When $z_i = 0.99985$

$$z_{i+1} = e^{-15(0.99985)} + \cos(0.99985) = 0.99985$$

When $z_i = 0.99985$

$$z_{i+1} = e^{-15(0.99985)} + \cos(0.99985)$$

$$= 0.99985$$