(show all your work and)

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1) Use the 64-bit long real format to find the decimal equivalent of the following floating-point machine number

0 01111111111 0101001100000000000000000000000000000000000000000001

2) Find the second Taylor polynomial $P_2(x)$ for the function $f(x) = (x - 1) \ln x$ about $x_0 = 1$. Approximate $\int_{0.5}^{1.5} f(x)dx$ using $\int_{0.5}^{1.5} P_2(x)dx$. Compute the relative error in this approximation.

Name:	**ID:**	**Sec**: **1**(9:00-9:50) **2**(10:00-10:50)

MATH-321 **Term-172** **ClassQuiz1**

1) Consider the fixed point method

$$x_n = \sqrt{2 - x_{n-1}}\ , \qquad x_0 = 0.5$$

Will it converge? Why? If it converges, to what value?

Name:	**ID:**	**Sec**: **1**(9:00-9:50) **2**(10:00-10:50)

MATH-321 **Term-172** **ClassQuiz5**

1) Let $f(x) = -x^3 - \cos(x)$. With $p_0 = -1$ and $p_1 = 0$, find p_3

a. Use the Secant method. **b.** Use the method of False Position.

2) Write MATLAB code for Newton's method to find a root of

$f(x) = x - \cos(x)$ using $x_0 = 1$ and $tol = 10^{-4}$.

```
clear;
clc;
```

Name:	**ID:**	**Sec**: **1**(9:00-9:50) **2**(10:00-10:50)

MATH-321 **Term-172** **ClassQuiz4**

1) Show that $g(x) = \pi + 0.5 \sin(x/2)$ has a unique fixed point on $[0, 2\pi]$.

2) Estimate the number of iterations required to achieve 10^{-2} accuracy, and compare this theoretical estimate to the number actually needed.

Name:	**ID:**	**Sec**: **1**(9:00-9:50) **2**(10:00-10:50)

MATH-321 Term-172 ClassQuiz3

1) Find a bound for the number of bisection method iterations needed to achieve an approximation with accuracy 10^{-4} to the solution of $x^3 - x - 1 = 0$ lying in the interval [1, 2].

2) Use the Bisection method to find solutions accurate to within 10^{-4} for $x^3 - x - 1 = 0$ on the interval [1, 2].

Name:	**ID:**	**Sec**: **1**(9:00-9:50) **2**(10:00-10:50)

MATH-321 **Term-172** **ClassQuiz2**