

NAME : ANSWERS

1. Give the MATLAB commands to plot $r(t) = t \cos(t)$, for t from 0 to 2π .
(Notice that (r, t) are polar coordinates.)

```
>> t = 0:0.1:2*pi;
>> r = t.*cos(t); % observe the dot !!!
>> polar(r,t);
```

2. As you may know, $\sqrt{\dots\sqrt{\sqrt{2}}}$ converges to one.

- (a) Complete the following m-file

```
function a = apply (f,x0,n)
%
% applies the function f n times starting at x0,
% e.g, apply(f,x0,0) returns x0
%      apply(f,x0,1) returns f(x0)
%      apply(f,x0,2) returns f(f(x0)), etc...
%
y = x0;
for i=1:n
    y = feval(f,y);
end;
a = y;
```

or recursively:

```
if (n == 0)
    a = x0;
elseif (n == 1)
    a = feval(f,x0);
else
    a = feval(f,apply(f,x0,n-1));
end;
```

- (b) Give the MATLAB command (using `apply`) to compute $\sqrt{\sqrt{\sqrt{\sqrt{\sqrt{2}}}}}$.

```
>> apply('sqrt',2,5)
```

Also give the value MATLAB shows.

```
ans =
```

```
1.0219
```

Alternative: On Monday 4/21, give the answers to 3.5.4,5; 4.7.2,4; and 5.4.5.