

## ME 1020 Engineering Programming with MATLAB

Problem 1.24:

24. A *cycloid* is the curve described by a point  $P$  on the circumference of a circular wheel of radius  $r$  rolling along the  $x$  axis. The curve is described in parametric form by the equations

$$x = r(\phi - \sin \phi)$$
$$y = r(1 - \cos \phi)$$

Use these equations to plot the cycloid for  $r = 10$  in. and  $0 \leq \phi \leq 4\pi$ .

```
%Prob. 1-24
disp('Problem 1.24: Scott Thomas')

phi=0:0.01:4*pi;
r=10;
x=r*(phi-sin(phi));
y=r*(1-cos(phi));
plot(x,y,'r','Linewidth',2),grid
title('Problem 1-24 Cycloid Function for r = 10 inches');
xlabel('x (inches)');
ylabel('y (inches)');
```

Problem 1.24: Scott Thomas

