

Parametric Practice

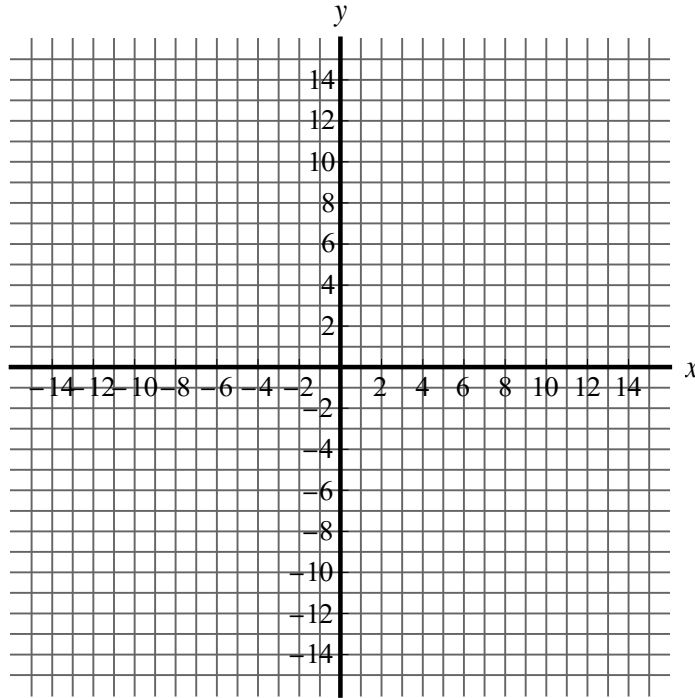
Name: _____ Per. _____

Directions: **Part I:** Graph each set of parametric equations ONE POINT AT A TIME.

Part II: Calculate the derivatives listed. Consider how your results match the graph.

(1) $x = t^2 - 10, y = 10 - t^2$

t	x	y
-4		
-3		
-2		
-1		
0		
1		
2		
3		
4		
5		

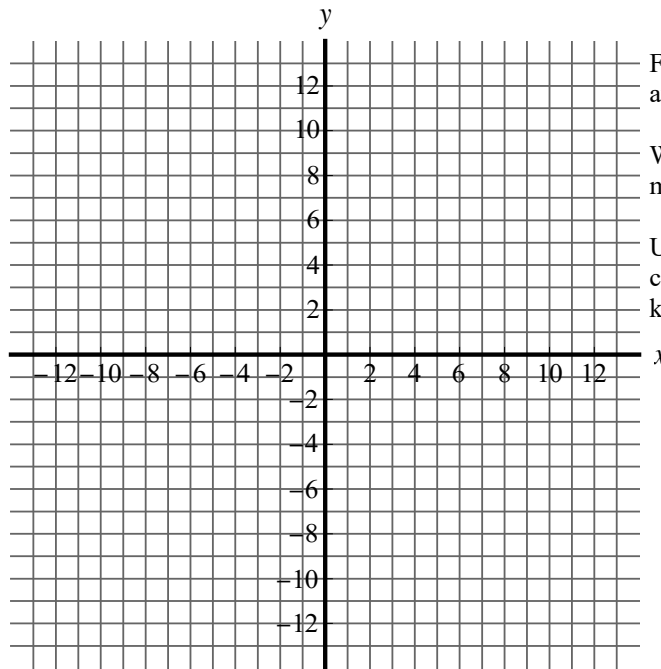


Find dx/dt , dy/dt , dy/dx , and d^2y/dx^2 .

What does each mean in terms of the graph?

(2) $x = t \cos t, y = t \sin t$

t	x	y	t	x	y
0	0	0	$\frac{13\pi}{6}$	5.89	3.40
$\frac{\pi}{6}$	0.453	0.262	$\frac{7\pi}{3}$	3.67	6.35
$\frac{\pi}{3}$	0.524	0.907	$\frac{5\pi}{2}$	0	7.85
$\frac{\pi}{2}$	0	1.57	$\frac{8\pi}{3}$	-4.19	7.26
$\frac{2\pi}{3}$	-1.05	1.81	$\frac{17\pi}{6}$	-7.71	4.45
$\frac{5\pi}{6}$	-2.27	1.31	3π	-9.42	0
π	-3.14	0	$\frac{19\pi}{6}$	-8.62	-4.97
$\frac{7\pi}{6}$	-3.17	-1.83	$\frac{10\pi}{3}$	-5.24	-9.07
$\frac{4\pi}{3}$	-2.09	-3.63	$\frac{7\pi}{2}$	0	-11.0
$\frac{3\pi}{2}$	0	-4.71	$\frac{11\pi}{3}$	5.76	-9.98
$\frac{5\pi}{3}$	2.62	-4.53	$\frac{23\pi}{6}$	10.4	-6.02
$\frac{11\pi}{6}$	4.99	-2.88	4π	12.6	0
2π	6.28	0			



Find dx/dt , dy/dt , and dy/dx at the point $t = 7\pi/3$.

What does each derivative mean in terms of the graph?

Using the graph (without calculating), what do you know about d^2y/dx^2 ?