Parametric Review Name: Block: Seat:

1. Giventhe parametric equation and value for the parameter t, find the coordinate of the point on the place curve described by the parametric equation corresponding to the given value of the parameter.

   (a) $x = 3 - 5t$, $y = 4 + 2t$; $t = 1$

   (b) $x = t^2 + 1$, $y = 5 - t^3$; $t = 2$

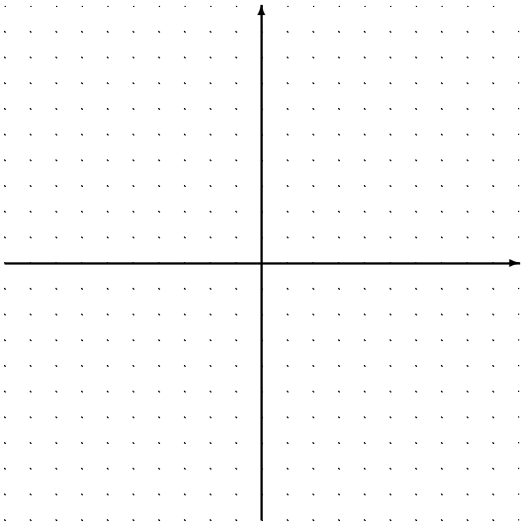
   (c) $x = 4 + 2\cos t$, $y = 3 + 5\sin t$; $t = \dfrac{\pi}{2}$

   (d) $(60\cos(15t))t$, $y = 5+(60\sin(15t))t-16t^2$;$t = 2$

2. Use point plotting to sketch a directed graph (show the direction with arrows)

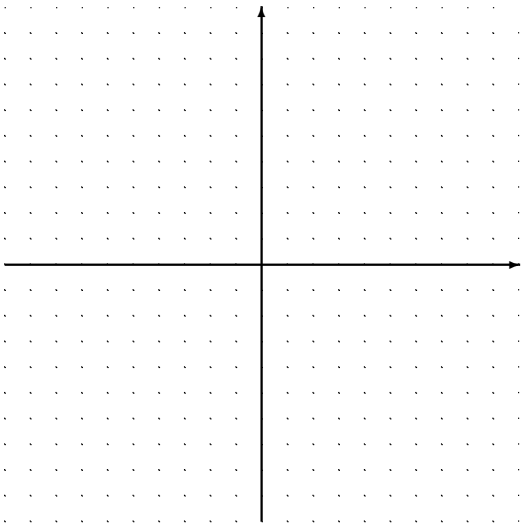
   (a) $x = t + 2$, $y = t^2$, for $t \in [-2, 2]$

t	
x	
y	



   (b) $x = t - 2$, $y = 2t + 1$, for $t \in [-2, 3]$

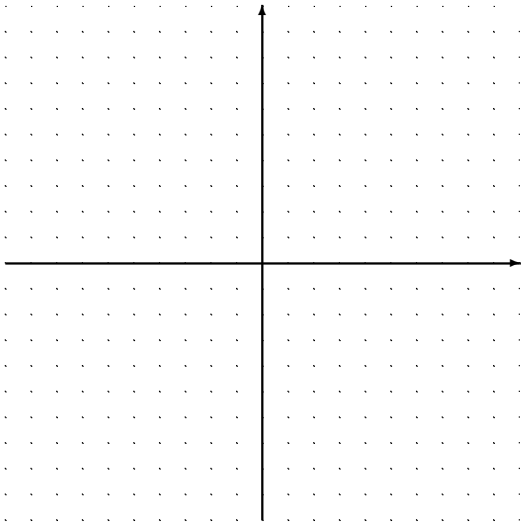
t	
x	
y	



3. Use point plotting to sketch a directed graph (show the direction with arrows)

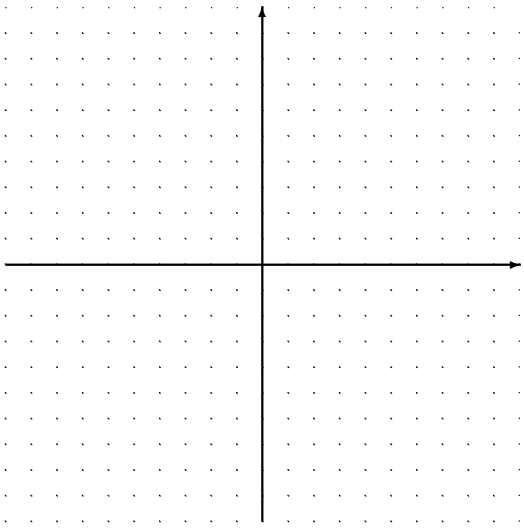
(a) $x = t + 1$, $y = \sqrt{t}$, for $t \in [0, \infty)$

t	
x	
y	



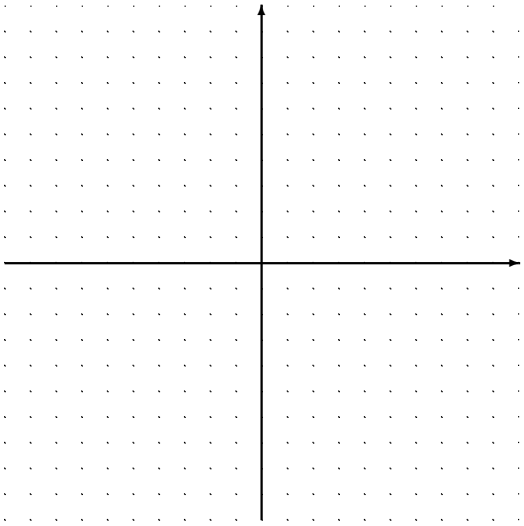
(b) $x = 4\cos t$, $y = 4\sin t$, for $t \in [0, 2\pi]$

t	
x	
y	



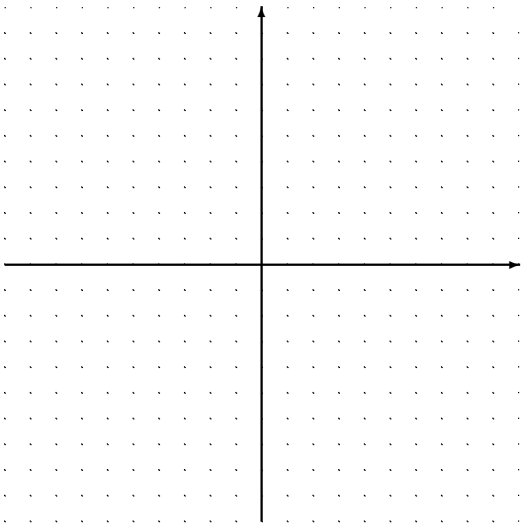
(c) $x = t^2 + 1$, $y = t^3 - 1$, for $t \in (-\infty, \infty)$

t	
x	
y	



(d) $x = 2t$, $y = |t - 1|$, for $t \in (-\infty, \infty)$

t	
x	
y	



4. Obtain the rectangular equation from the given set of parametric equations by eliminating the parameter t

   (a) $x = t$, $y = 2t$

   (b) $x = 2t - 4$, $y = 4t^2$

   (c) $x = \sqrt{t}$, $y = t - 1$

   (d) $x = 2\sin t$, $y = 2\cos t$; $t \in [0, 2\pi]$

   (e) $x = 2\cos t$, $y = 3\sin t$; $t \in [0, 2\pi]$

   (f) $x = \sec t$, $y = \tan t$

   (g) $x = t^2 + 2$, $y = t^2 - 2$

   (h) $x = 2^t$, $y = 2^{-t}$; $t \in [0, \infty)$

Answers:

(1a) $(-2, 6)$; (1b) $(5, 13)$; (1c) $(4, 8)$; (1d) $(60\sqrt{3}, 1)$;
(2a) $t = -2 \rightarrow (0, 4)$ $t = -1 \rightarrow (1, 1)$...$t = 2 \rightarrow (4, 4)$; (2b) $t = -2 \rightarrow (-4, -3)$..$t = 3 \rightarrow (1, 7)$;
(3a) $(1, 0) \rightarrow \sqrt{x - 1}$; (3b) $(4, 0) \rightarrow$ circle of radius 4;
(3c) $t = 0 \rightarrow (1, -1)$ like a side-ways sea-gull ;
(3d) $t = -3 \rightarrow (-6, 4), t = 0 \rightarrow (0, 1), t = 3 \rightarrow (6, 2)$ like a side-ways sea-gull ;
(4a) $y = 2x$; (4b)$y = (x + y)^2$; (4c) $y = x^2 - 1$ or $x = \sqrt{y + 1}$;
(4d) Hint: Use the identity $\sin^2 t + \cos^2 t = 1$. so that $x^2 + y^2 = 4$;
(4e) $\dfrac{x^2}{4} + \dfrac{y^2}{9} = 1$
(4f) Hint: If $\cos t = \frac{1}{x}$, use Pythagoras to find $\sin t$. So $y = \pm\sqrt{x^2 - 1}$ or $x^2 - y^2 = 1$;
(4g) $y = x$; (4h) $y = 2^{-(\log_2 x)} = \dfrac{1}{x}$ for $x \geq 1$