From Vectors to Parametrics (and back!)

1. Is the vector from (5, 11) to (-1,19) parallel to 9**i** – 12**j**? How can you tell?

2. Given a point P and a vector **v**, we can write parametric equations for the line through P parallel to **v** as $P + t\mathbf{v}$. If $P = (x_0, y_0)$ and $\mathbf{v} = \langle a, b \rangle$, then $P + t\mathbf{v} =$ (_____ , _____) (sticklers will notice that we added a point to a vector and got a point, but don't worry about it.

3. Write parametric equations for the line from (4,6) parallel to –2**i** + 8**j**

4. Given $P = (4,6)$ and $Q = (8,4)$, use vectors to find parametric equations for the line from P to Q.

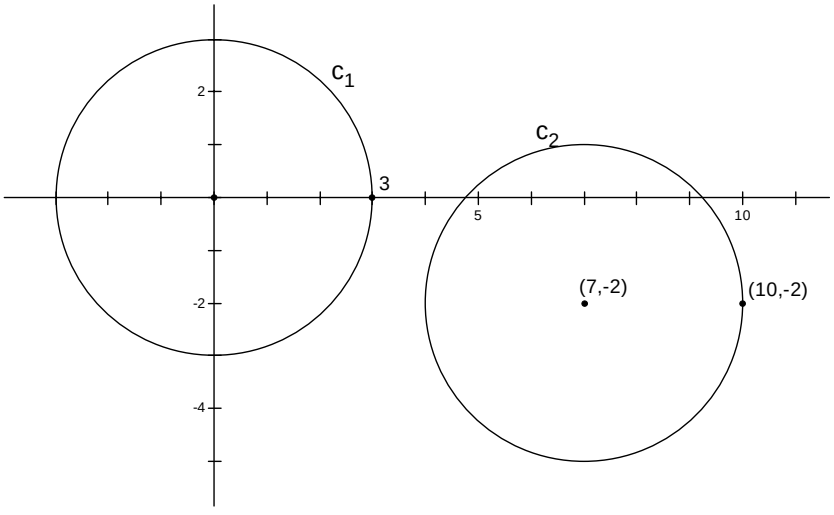
→ What values of the parameter give points on segment $\overline{PQ}$?

→ What happens if we take the points in the opposite order?

5. Given $P = (4,6,-2)$ and $Q = (8,4,1)$, use vectors to find parametric equations for the line from P to Q.

But wait…there's more!

6. You know that the heads of the vectors $\langle \cos t, \sin t \rangle$ trace out a _____ as t goes from 0 to 2π (right)? Write vectors whose heads that would trace out the circle c_1 at right.

7. Now write vectors whose heads would trace out the circle c_2 at right.

8. Challenge: same as #7, but twice as fast!