11. In QI, both components of \( \langle y, x \rangle \) are positive, i.e., \( <+, +> \). In Q2, \( <y, x> \) is \( <+, -> \). In Q3, \( <y, x> \) is \( <-, -> \) and in Q4 \( <y, x> \) is \( <-, +> \).

12. The x-component of \( \langle 1, \sin y \rangle \) is constant, while the y-component is periodic.

13. Notice that the field doesn't depend on \( y \), so the vectors along any vertical line in the xy-plane are identical.

14. Vectors become longer as we move farther from the x-axis, while the slope (in absolute value) becomes less as we move farther from the y-axis.

29. \( \nabla f = \langle 2x, 2y \rangle \). Note that \( \nabla f = 2\langle x, y \rangle = 2\vec{r} \), so the vectors point in the same direction as the position vector \( \vec{r} \).

30. \( \nabla f = \langle 2x + y, y \rangle \). The y-component has the same value (and sign) as \( x \). Also, on the line \( y = -x \), the vectors are parallel to \( \vec{y} = \vec{x} \).

31. \( \nabla f = \langle 2(x+y), 2(x+y) \rangle \), so all vectors are parallel to the line \( y = x \).

32. \( \nabla f = \frac{\cos \sqrt{x^2 + y^2}}{\sqrt{x^2 + y^2}} \langle x, y \rangle = \cos \theta \vec{r} \), so all vectors are parallel to the position vector \( \vec{r} \), with length \( \sqrt{x^2 + y^2} \) (and direction) that is periodic in \( \theta \).