

12.1 number 39: Describe each of the following circles in three space with either one equation or two equations. Each circle has radius two and center $(0, 2, 0)$.

- (a) This circle lies in the xy -plane.
- (b) This circle lies in the yz -plane.
- (c) This circle lies in the plane $y = 2$.

Answer: (a) In the xy -plane z is always zero, so the circle is $x^2 + (y - 2)^2 = 4$ and $z = 0$.

(b) In the yz -plane, x is always zero, so the circle is $(y - 2)^2 + z^2 = 4$ and $x = 0$.

(c) In the plane $y = 2$, y is always 2, so the circle is $x^2 + z^2 = 4$ and $x = 0$.