1 Lines in Polar Coordinates

(Algebra involving trigonometric functions) Purpose: Practice with polar equations.

The general equation for a straight line in polar coordinates is given by:

$$r(\phi) = \frac{r_0}{\cos(\phi - \delta)} \tag{1}$$

where r_0 and δ are constant parameters. Find the polar equation for the straight lines below. You do NOT need to evaluate any complicated trig or inverse trig functions. You may want to try plotting the general polar equation to figure out the roles of the parameters.

(a) $y = 3$

(b) $x = 3$

(c) $y = -3x + 2$