PARALLEL LINES: HAVE SAME SLOPES

PERPENDICULAR LINES: HAVE SLOPES THAT ARE NEGATIVE RECIPROCALS

#1 $m = \frac{-4}{3}$

a) PARALLEL: $m = \frac{-4}{3}$

b) PERP:

$\frac{-4}{3} \rightarrow \frac{-4}{3} \rightarrow \frac{3}{-4} \rightarrow \frac{3}{4}$

START WITH GIVEN SLOPE — WRITE IN FRACTION FORM — FLIP IT — CHANGE ITS SIGN

$m = \frac{3}{4}$

#2

$-4x - 2y = 5$ $\qquad$ $12x + 6y = -7$

$-4x - 5 = 2y$ $\qquad$ $6y = -12x - 7$

$\frac{-4}{2}x - \frac{5}{2} = \frac{2}{2}y$ $\qquad$ $\frac{6}{6}y = \frac{-12}{6}x - \frac{7}{6}$

$-2x - \frac{5}{2} = y$ $\qquad$ $y = -2x - \frac{7}{6}$

$m = -2$ $\qquad$ $m = -2$

SAME SO PARALLEL

#3 PARALLEL TO $y = -2x + 3$ THROUGH $(-3, 4)$ (x, y)

STEP 1: FIND m

(a) WRITE GIVEN LINE IN SLOPE INTERCEPT FORM $y = -2x + 3$

(b) IDENTIFY SLOPE: SLOPE IS -2

(c) PARALLEL LINES HAVE SAME SLOPE SO $m = -2$

STEP 2: PLUG IN GIVEN POINT FOR X AND Y, PLUG IN m FROM (b) (c) AND SOLVE FOR b

$y = mx + b$

$4 = -2(-3) + b$

$4 = 6 + b$

$4 - 6 = b$

$-2 = b$

STEP 3: WRITE ANSWER

$y = mx + b$

$y = -2x - 2$

//

#4 PARALLEL TO $3x + y = 5$ THRU $(-2, 6)$ (x, y)

(1) (a) $3x + y = 5$

$y = -3x + 5$

(b) SLOPE IS -3

(c) $m = -3$

(2) $y = mx + b$

$6 = -3(-2) + b$

$6 = 6 + b$

$6 - 6 = b$

$0 = b$

(3) $y = mx + b$

$y = -3x + 0$

$y = -3x$