

WORKSHOP WEEK 1

27) $m = -2$ point $(3, -1)$ $y = mx + b$ $(-1) = -2(3) + b$
 $(-1) = -6 + b$
 $-1 + 6 = b$ $b = 5$

$$y = -2x + 5$$

30) x-intercept = 2 point $(4, -5)$ $m = \frac{y_2 - y_1}{x_2 - x_1}$ $y = mx + b$
 point $(2, 0)$ $m = \frac{-5 - 0}{4 - 2}$ $0 = -\frac{5}{2}(2) + b$
 $m = -\frac{5}{2}$ $0 = -5 + b$ $b = 5$

$$y = -\frac{5}{2}x + 5$$

31) y-intercept = -2 point $(5, -3)$ $m = \frac{y_2 - y_1}{x_2 - x_1}$ $y = mx + b$
 point $(0, -2)$ $m = \frac{-3 - (-2)}{5 - 0}$ $-2 = -\frac{1}{5}(0) + b$
 $m = \frac{-3 + 2}{5}$ $m = -\frac{1}{5}$ $-2 = b$

$$y = -\frac{1}{5}x - 2$$

32) $(3, -4)$ $(2, 1)$ $m = \frac{y_2 - y_1}{x_2 - x_1}$ $y = mx + b$ point $(2, 1)$
 $m = \frac{1 - (-4)}{2 - 3}$ $1 = -5(2) + b$
 $m = \frac{5}{-1}$ $1 = -10 + b$
 $m = -5$ $11 = b$

$$y = -5x + 11$$

33) parallel to $2x - 3y = -4$ $2x - 3y = -4$ $2x + 4 = 3y$ $\frac{2x + 4}{3} = y$ $\frac{2}{3}x + \frac{4}{3} = y$
 containing $(-5, 3)$ $m_1 = \frac{2}{3} \rightarrow m_2 = \frac{2}{3}$ $y = mx + b$
 $3 = (\frac{2}{3})(-5) + b$ $3 = -\frac{10}{3} + b$
 $3 + \frac{10}{3} = b$ $\frac{9 + 10}{3} = b$ $b = \frac{19}{3}$

$$y = \frac{2}{3}x + \frac{19}{3}$$

③4 parallel to $x+y=2$
containing point $(1, -3)$

$$x+y=2$$

$$y=-x+2$$

$$\downarrow$$

$$m_1 = -1$$

$$m_2 = -1 \quad (1, -3)$$

$$y = mx + b$$

$$(-3) = (-1)(1) + b$$

$$-3 = -1 + b$$

$$-3 + 1 = b \quad b = -2$$

$$y = -1x - 2$$

③5 perpendicular to $x+y=2$
containing point $(4, -3)$

$$x+y=2$$

$$y=-x+2$$

$$\downarrow$$

$$m_1 = -1$$

$$m_2 = -\frac{1}{m_1} \quad \text{negative reciprocal}$$

$$m_2 = -\frac{1}{(-1)} \quad m_2 = 1$$

$$m_2 = 1 \text{ containing } (4, -3)$$

$$y = mx + b$$

$$(-3) = (1)(4) + b$$

$$-3 = 4 + b$$

$$-3 - 4 = b$$

$$-7 = b$$

$$y = 1x - 7$$

③6 perpendicular to $3x - y = -4$
containing point $(-2, 4)$

$$3x - y = -4$$

$$3x + 4 = y$$

$$\downarrow$$

$$m_1 = 3$$

$$\downarrow$$

$$m_2 = -\frac{1}{m_1}$$

$$m_2 = -\frac{1}{3}$$

$$m_2 = -\frac{1}{3} \text{ containing } (-2, 4)$$

$$y = mx + b$$

$$4 = \left(-\frac{1}{3}\right)(-2) + b$$

$$4 = \frac{2}{3} + b$$

$$4 - \frac{2}{3} = b$$

$$\frac{12}{3} - \frac{2}{3} = b \quad b = \frac{10}{3}$$

$$y = -\frac{1}{3}x + \frac{10}{3}$$

