# WORKSHOP WEEK 1

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

$(-1) = -6 + b$

$-1 + 6 = b \quad b = 5$

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

(30) $x$-intercept $= 2$ point $(4, -5)$

point $(2, 0)$

$m = \frac{y_2 - y_1}{x_2 - x_1}$ $\quad y = mx + b$

point $(2, 0)$

$m = \frac{-5 - 0}{4 - 2}$ $\quad 0 = -\frac{5}{2}(2) + b$

$m = -\frac{5}{2}$ $\quad 0 = -5 + b \quad b = 5$

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

(31) $y$-intercept $= -2$ point $(5, -3)$

point $(0, -2)$

$m = \frac{y_2 - y_1}{x_2 - x_1}$ $\quad y = mx + b$

point $(0, -2)$

$m = \frac{-3 - (-2)}{5 - 0}$ $\quad -2 = -\frac{1}{5}(0) + b$

$m = \frac{-3 + 2}{5} \quad m = -\frac{1}{5}$ $\quad -2 = b$

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

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

$m = \frac{1 - (-4)}{2 - 3}$ $\quad 1 = -5(2) + b$

$m = \frac{5}{-1}$ $\quad 1 = -10 + b$

$m = -5$ $\quad 11 = b$

$\boxed{y = -5x + 11}$

(33) parallel to $2x - 3y = -4$ containing $(-5, 3)$

$2x - 3y = -4$

$2x + 4 = 3y$

$\frac{2x + 4}{3} = y$

$\frac{2}{3}x + \frac{4}{3} = y$

parallel

$m_1 = \frac{2}{3} \rightarrow m_2 = \frac{2}{3}$

containing $(-5, 3)$

$y = mx + b$

$3 = \left(\frac{2}{3}\right)(-5) + b$

$3 = -\frac{10}{3} + b$

$3 + \frac{10}{3} = b \quad \frac{9}{3} + \frac{10}{3} = b \quad b = \frac{19}{3}$

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

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

$x+y=2$

$y=-x+2$

$m_1=-1$

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

$y=mx+b$

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

$-3=-1+b$

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

$\boxed{y=-1x-2}$

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

$x+y=2$

$y=-x+2$

$m_1=-1$

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

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

$m_2=1$ containing $(4,-3)$

$y=mx+b$

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

$-3=4+b$

$-3-4=b$

$-7=b$

$\boxed{y=1x-7}$

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

$3x-y=-4$

$3x+4=y$

$m_1=3$

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

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

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

$y=mx+b$

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

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

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

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

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