MPM1D WS 5.1 The Equation of a Line:

1. Slope of 1, going through (3,5)

$(x-3)\ \frac{y-5}{x-3} = 1(x-3)$.

$y-5 = x-3$.

$y = x+2$.

2. Slope of -3 going through (5,-1)

$(x-5)\ \frac{y+1}{x-5} = -3(x-5)$

$y+1 = -3x+15$.

$y = -3x+14$.

3. slope of $\frac{2}{3}$, going through (6,0).

$(x-6)\ \frac{y-0}{x-6} = \frac{2}{3}(x-6)$

$y = \frac{2}{3}x - 4$.

4. slope of $\frac{-1}{2}$, going through (2,-5).

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

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

$y = -\frac{1}{2}x - 4$

5. Through (4,7) and (6,2)

Slope $= \frac{7-2}{4-6} = \frac{-5}{2}$

$(x-4)\ \frac{y-7}{x-4} = \frac{-5}{2}(x-4)$

$y-7 = -\frac{5}{2}x+10$

$y = -\frac{5}{2}x+17$.

6. Through (-3,4) and (2,-6)

Slope $= \frac{4+6}{-3-2} = \frac{10}{-5} = -2$.

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

$y-4 = -2x+6$

$y = -2x+10$

7. Through (80,345) and (20,245)

$\frac{345-245}{80-20} = 10$

$(x-20)\ \frac{y-245}{x-20} = 10(x-20)$.

$y-245 = 10x-200$

$y = 10x+45$

8) Through $(4,-2)$ and $(10,-2)$

$$\frac{-2+2}{4-10} = 0.$$

$$(x-4)\frac{y+2}{x-4} = 0\,(x-4)$$

$$y = -2.$$

4) Through $(4,-2)$ and $(4,-73)$.

$$\frac{-2+73}{4-4} = \frac{71}{0} = 0$$

$$(x-4)\frac{y+2}{x-4} = 0\,(x-4)$$

$$y+2 = 0$$

$$y = -2.$$

10 slope $\frac{2}{3}$, going through $(5,6)$ other point (x,y)

$$(x-5)\frac{y-6}{x-5} = \frac{2}{3}(x-5)$$

$$y-6 = \frac{2}{3}x - \frac{10}{3}$$

$$y = \frac{2}{3}x + \frac{8}{3}$$