MPM 1D WS 4.9 First Differences and Non-Linear Relations

1

(a)

x	y	
0	8	
1	10	2
2	12	2
3	14	2.

Linear relationship

eq

equation.

(0, 8) (1, 10)

$\frac{10-8}{1-0} = \frac{2}{1} = 2.$

~~ask~~ another point (x, y)

$(x-0)\frac{y-8}{x-0} = 2(x-0)$

$y-8 = 2x$

$y = 2x+8$

(b)

x	y	
1	-2	
2	4	6
3	10	6
4	16	6

Linear relationship.

equation.

(1, -2) (2, 4)

$\frac{4+2}{2-1} = \frac{6}{1} = 6$

another point (x, y)

$(x-1)\frac{y+2}{x-1} = 6(x-1)$

$y+2 = 6x-6$

$y = 6x-8$

(c)

x	y	
0	-1	
1	0	1
2	3	3
3	8	5.

non-Linear relationship.

equation

(0, -1) (1, 0)

$\frac{0+1}{1-0} = \frac{1}{1} = 1$

~~another~~ another point (x, y)

$(x-0)\frac{y+1}{x-0} = 1(x-0)$

$y+1 = 1x$

$y = x-1$

(d)

x	y	
1	14	
2	10	-4
3	6	-4
4	2.	-4.

Linear relationship

equation

(1, 14) (2, 10)

$\frac{14-10}{1-2} = \frac{4}{-1} = -4.$

another point (x, y)

$(x-1)\frac{y-14}{x-1} = -4(x-1)$

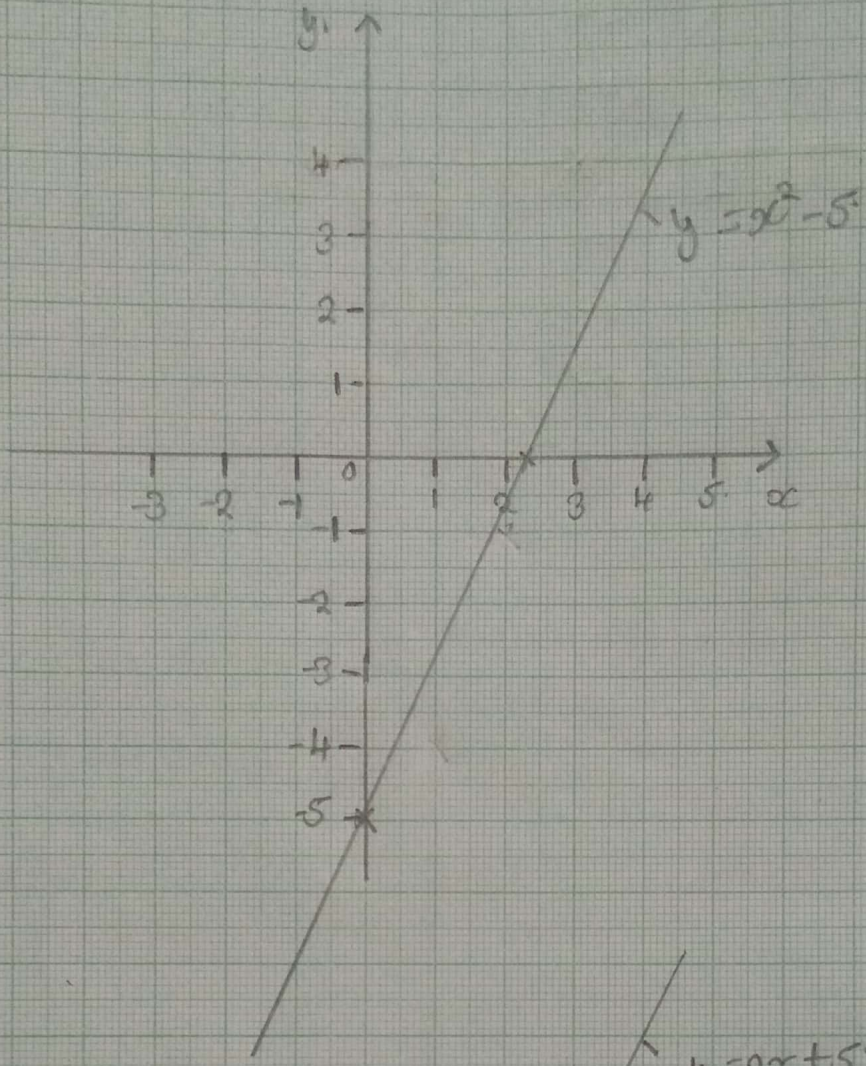
$y-14 = -4x+4.$

$y = -4x+18$

MPD 1D WS 4.9 First Differences and Non-Linear Relations

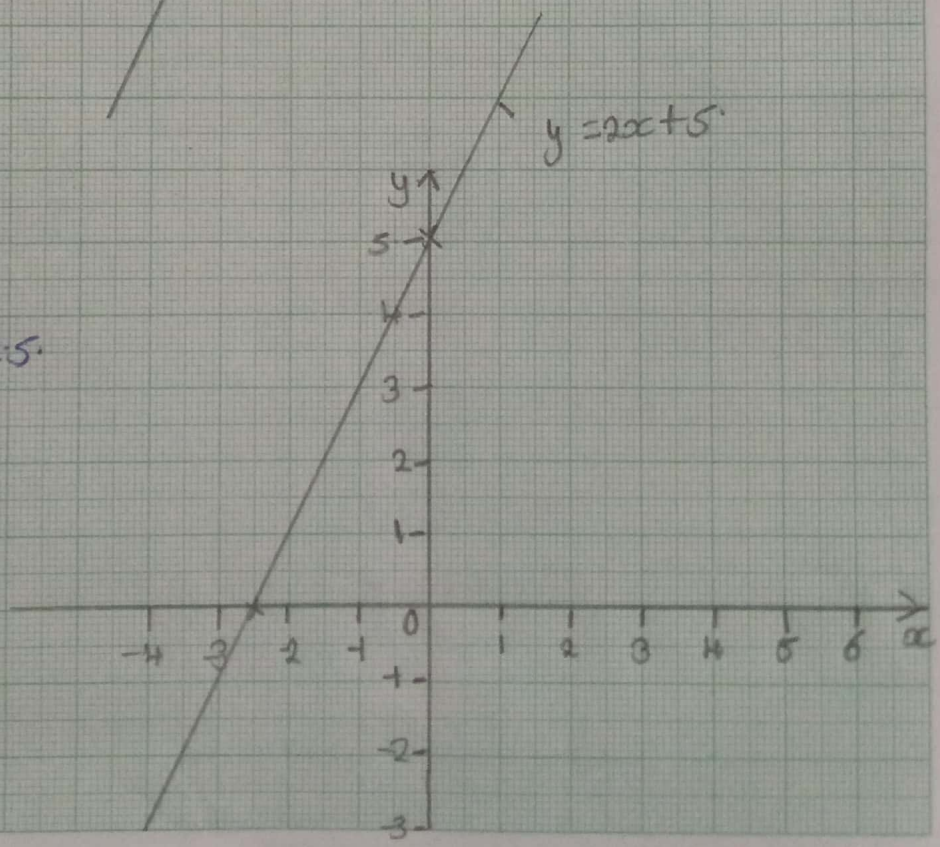
a) $y = x^2 - 5$

x	0	1	-2	-3	2	3
y	-5	-4	-1	4	0	



(b) $y = 2x + 5$

x	0	-2.5
y	5	0



c) $y = -x^2$.