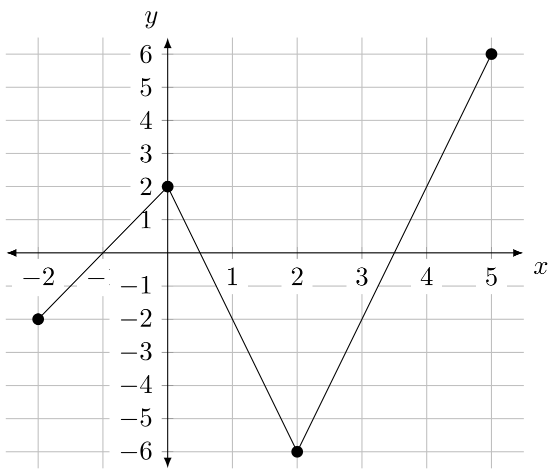
1. The differentiable function $f(x)$ has the following values and derivatives:

x	0	2	-2	-6	-2	2
$f(x)$	3	-1	11	6	10	-5
$f'(x)$	4	11	5	2	8	7

The function $g(x)$ is shown below:



Graph of g

If $h(x) = f(g(x))$, find the equation of the tangent line to $h(x)$ at $x = 1$.

Solution: $h'(1) = f'(g(1))g'(1) = f'(-2) \cdot (-4) = (5) \cdot (-4) = -20$

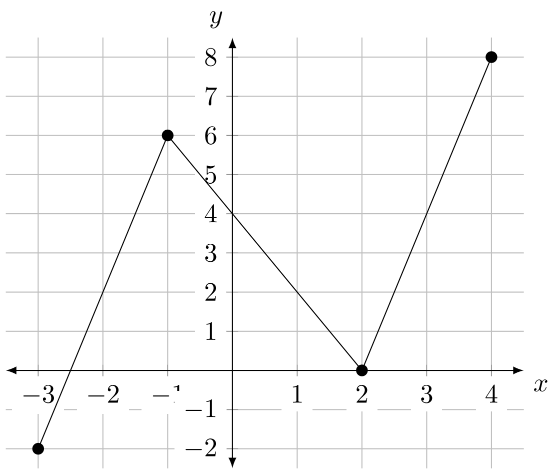
Then the equation of the tangent line is, by point-slope,

$$y - (11) = -20(x - 1)$$

2. The differentiable function $f(x)$ has the following values and derivatives:

x	2	6	4	2	4	8
$f(x)$	5	11	-4	2	9	-6
$f'(x)$	1	5	-9	-3	2	4

The function $g(x)$ is shown below:



Graph of g

If $h(x) = f(g(x))$, find the equation of the tangent line to $h(x)$ at $x = 0$.

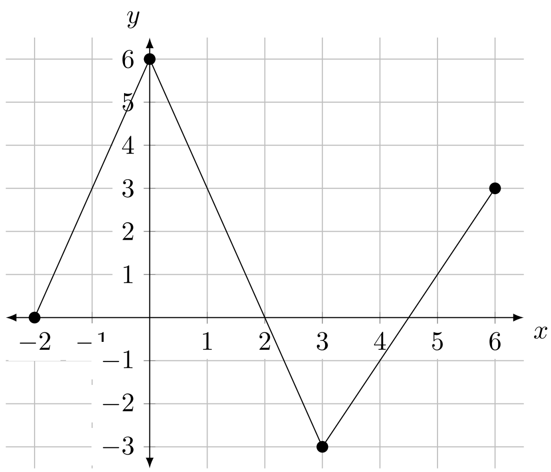
Solution: $h'(0) = f'(g(0))g'(0) = f'(4) \cdot (-2) = (-9) \cdot (-2) = 18$
Then the equation of the tangent line is, by point-slope,

$$y - (-4) = 18(x - 0)$$

3. The differentiable function $f(x)$ has the following values and derivatives:

x	3	6	3	0	-1	1
$f(x)$	8	6	7	-4	-2	-11
$f'(x)$	1	9	-8	3	-10	6

The function $g(x)$ is shown below:



Graph of g

If $h(x) = f(g(x))$, find the equation of the tangent line to $h(x)$ at $x = 1$.

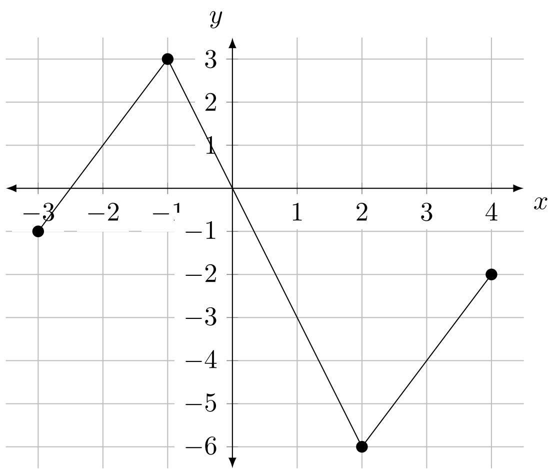
Solution: $h'(1) = f'(g(1))g'(1) = f'(3) \cdot (-3) = (-8) \cdot (-3) = 24$
Then the equation of the tangent line is, by point-slope,

$$y - (7) = 24(x - 1)$$

4. The differentiable function $f(x)$ has the following values and derivatives:

x	1	3	0	-3	-4	-2
$f(x)$	-8	-10	9	-7	-11	-2
$f'(x)$	6	9	-2	-10	7	1

The function $g(x)$ is shown below:



Graph of g

If $h(x) = f(g(x))$, find the equation of the tangent line to $h(x)$ at $x = 0$.

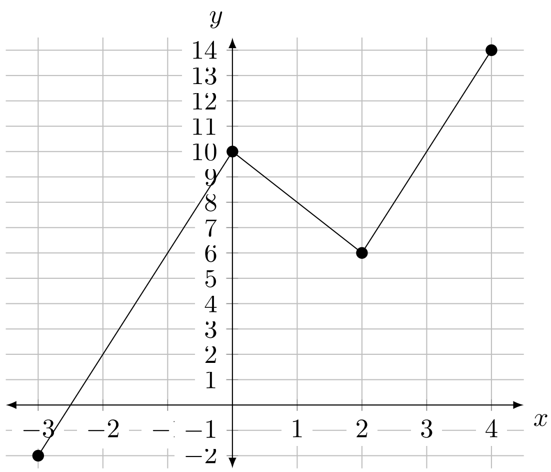
Solution: $h'(0) = f'(g(0))g'(0) = f'(0) \cdot (-3) = (-2) \cdot (-3) = 6$
Then the equation of the tangent line is, by point-slope,

$$y - (9) = 6(x - 0)$$

5. The differentiable function $f(x)$ has the following values and derivatives:

x	2	6	8	6	10	14
$f(x)$	-5	-6	9	-10	2	-7
$f'(x)$	-6	8	-4	-7	-9	-1

The function $g(x)$ is shown below:



Graph of g

If $h(x) = f(g(x))$, find the equation of the tangent line to $h(x)$ at $x = 1$.

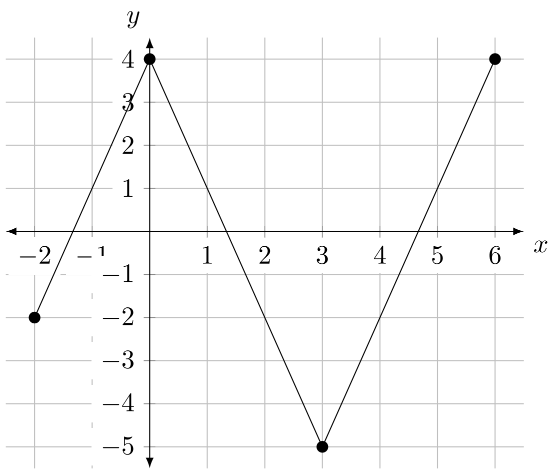
Solution: $h'(1) = f'(g(1))g'(1) = f'(8) \cdot (-2) = (-4) \cdot (-2) = 8$
Then the equation of the tangent line is, by point-slope,

$$y - (9) = 8(x - 1)$$

6. The differentiable function $f(x)$ has the following values and derivatives:

x	1	4	1	-2	-2	1
$f(x)$	4	-8	5	-7	-9	10
$f'(x)$	1	3	9	-10	-11	6

The function $g(x)$ is shown below:



Graph of g

If $h(x) = f(g(x))$, find the equation of the tangent line to $h(x)$ at $x = 1$.

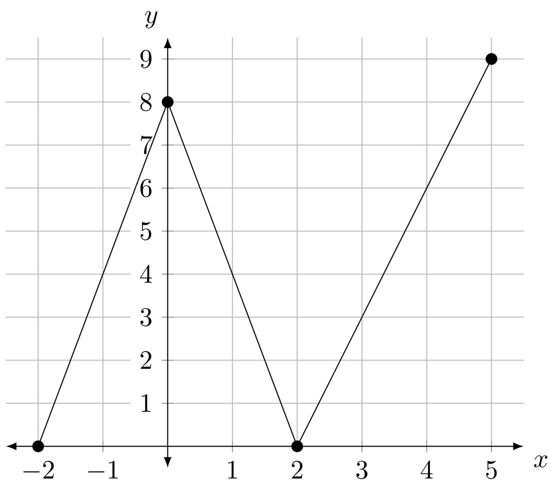
Solution: $h'(1) = f'(g(1))g'(1) = f'(1) \cdot (-3) = (9) \cdot (-3) = -27$
Then the equation of the tangent line is, by point-slope,

$$y - (5) = -27(x - 1)$$

7. The differentiable function $f(x)$ has the following values and derivatives:

x	4	8	4	0	3	6
$f(x)$	2	-9	-6	-3	-4	-5
$f'(x)$	-5	-11	-3	8	7	-1

The function $g(x)$ is shown below:



Graph of g

If $h(x) = f(g(x))$, find the equation of the tangent line to $h(x)$ at $x = 1$.

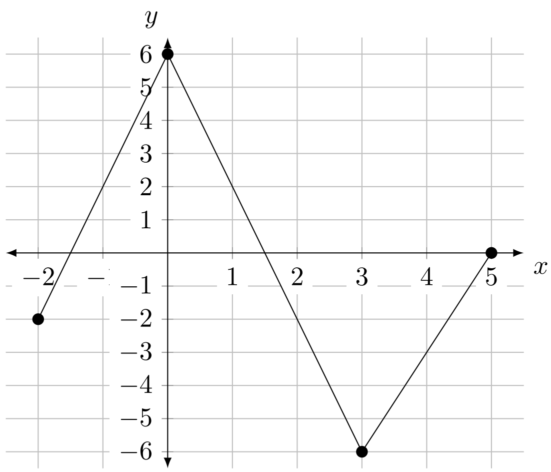
Solution: $h'(1) = f'(g(1))g'(1) = f'(4) \cdot (-4) = (-3) \cdot (-4) = 12$
Then the equation of the tangent line is, by point-slope,

$$y - (-6) = 12(x - 1)$$

8. The differentiable function $f(x)$ has the following values and derivatives:

x	2	6	2	-2	-3	0
$f(x)$	-10	2	-5	11	-4	9
$f'(x)$	10	-9	8	11	-7	-4

The function $g(x)$ is shown below:



Graph of g

If $h(x) = f(g(x))$, find the equation of the tangent line to $h(x)$ at $x = 1$.

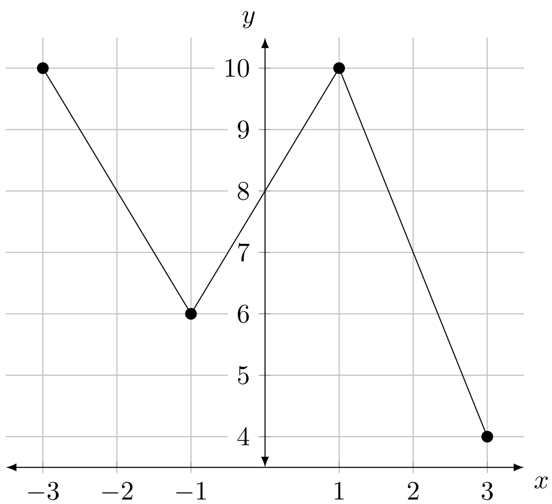
Solution: $h'(1) = f'(g(1))g'(1) = f'(2) \cdot (-4) = (8) \cdot (-4) = -32$
Then the equation of the tangent line is, by point-slope,

$$y - (-5) = -32(x - 1)$$

9. The differentiable function $f(x)$ has the following values and derivatives:

x	8	6	8	10	7	4
$f(x)$	10	-7	-8	6	2	9
$f'(x)$	-2	7	6	11	8	-1

The function $g(x)$ is shown below:



Graph of g

If $h(x) = f(g(x))$, find the equation of the tangent line to $h(x)$ at $x = 0$.

Solution: $h'(0) = f'(g(0))g'(0) = f'(8) \cdot (2) = (6) \cdot (2) = 12$

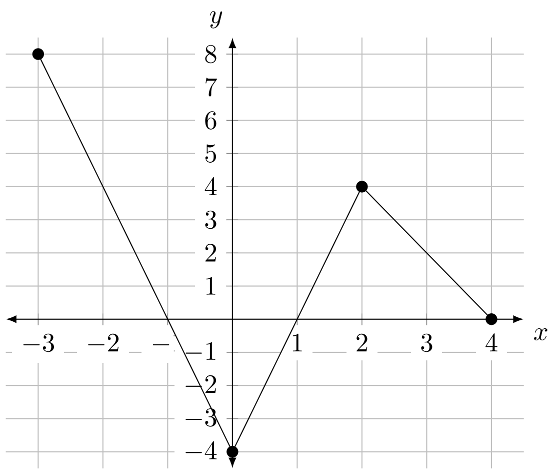
Then the equation of the tangent line is, by point-slope,

$$y - (-8) = 12(x - 0)$$

10. The differentiable function $f(x)$ has the following values and derivatives:

x	4	0	0	4	2	0
$f(x)$	7	-4	5	-3	-9	-11
$f'(x)$	-3	4	10	-1	6	2

The function $g(x)$ is shown below:



Graph of g

If $h(x) = f(g(x))$, find the equation of the tangent line to $h(x)$ at $x = 1$.

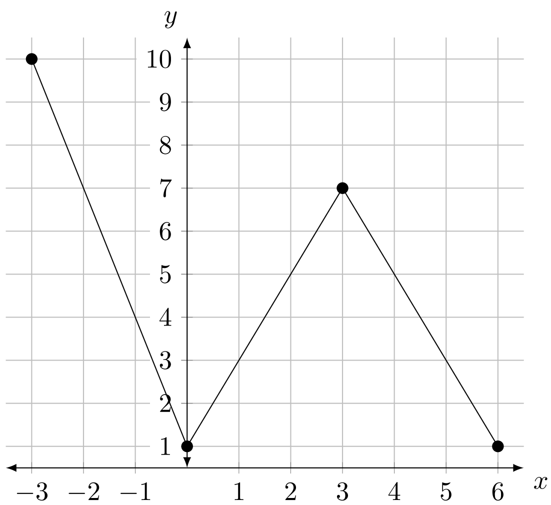
Solution: $h'(1) = f'(g(1))g'(1) = f'(0) \cdot (4) = (10) \cdot (4) = 40$
Then the equation of the tangent line is, by point-slope,

$$y - (5) = 40(x - 1)$$

11. The differentiable function $f(x)$ has the following values and derivatives:

x	7	4	3	5	5	3
$f(x)$	4	-8	10	-7	1	-3
$f'(x)$	9	-6	-4	7	2	3

The function $g(x)$ is shown below:



Graph of g

If $h(x) = f(g(x))$, find the equation of the tangent line to $h(x)$ at $x = 1$.

Solution: $h'(1) = f'(g(1))g'(1) = f'(3) \cdot (2) = (-4) \cdot (2) = -8$

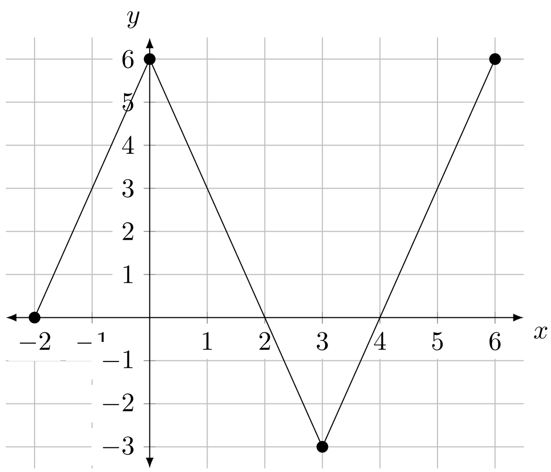
Then the equation of the tangent line is, by point-slope,

$$y - (10) = -8(x - 1)$$

12. The differentiable function $f(x)$ has the following values and derivatives:

x	3	6	3	0	0	3
$f(x)$	6	9	-4	7	-3	-1
$f'(x)$	4	3	-6	2	7	-11

The function $g(x)$ is shown below:



Graph of g

If $h(x) = f(g(x))$, find the equation of the tangent line to $h(x)$ at $x = 1$.

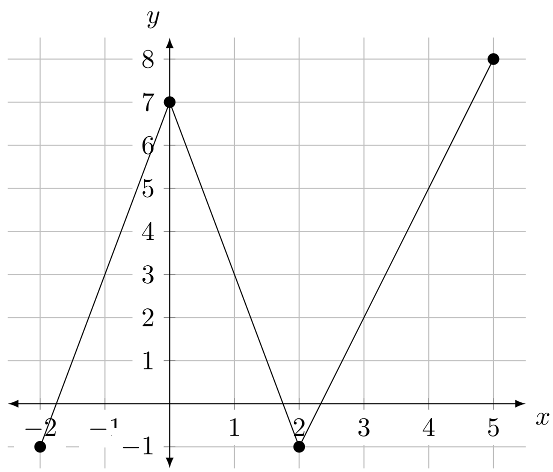
Solution: $h'(1) = f'(g(1))g'(1) = f'(3) \cdot (-3) = (-6) \cdot (-3) = 18$
Then the equation of the tangent line is, by point-slope,

$$y - (-4) = 18(x - 1)$$

13. The differentiable function $f(x)$ has the following values and derivatives:

x	3	7	3	-1	2	5
$f(x)$	4	9	6	-2	5	8
$f'(x)$	-6	3	-4	10	1	9

The function $g(x)$ is shown below:



Graph of g

If $h(x) = f(g(x))$, find the equation of the tangent line to $h(x)$ at $x = 1$.

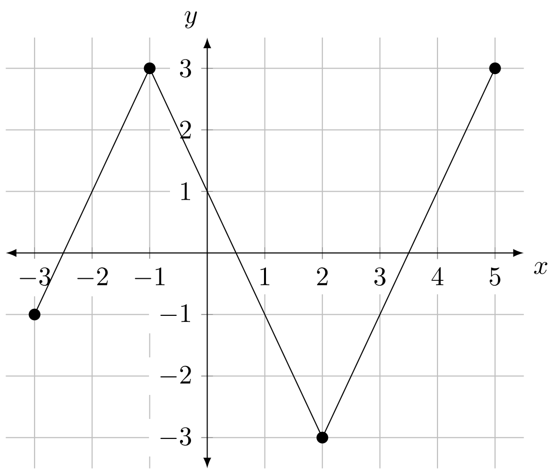
Solution: $h'(1) = f'(g(1))g'(1) = f'(3) \cdot (-4) = (-4) \cdot (-4) = 16$
Then the equation of the tangent line is, by point-slope,

$$y - (6) = 16(x - 1)$$

14. The differentiable function $f(x)$ has the following values and derivatives:

x	1	3	1	-1	-1	1
$f(x)$	-5	-11	-6	3	-4	10
$f'(x)$	11	3	-10	-7	-6	9

The function $g(x)$ is shown below:



Graph of g

If $h(x) = f(g(x))$, find the equation of the tangent line to $h(x)$ at $x = 0$.

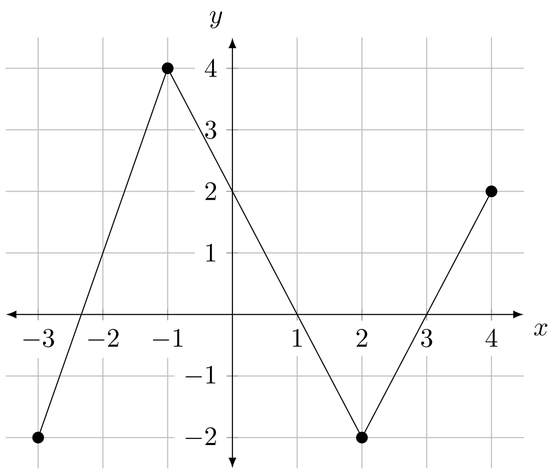
Solution: $h'(0) = f'(g(0))g'(0) = f'(1) \cdot (-2) = (-10) \cdot (-2) = 20$
Then the equation of the tangent line is, by point-slope,

$$y - (-6) = 20(x - 0)$$

15. The differentiable function $f(x)$ has the following values and derivatives:

x	1	4	2	0	0	2
$f(x)$	-11	6	8	-1	-7	3
$f'(x)$	-5	8	-1	-3	7	11

The function $g(x)$ is shown below:



Graph of g

If $h(x) = f(g(x))$, find the equation of the tangent line to $h(x)$ at $x = 0$.

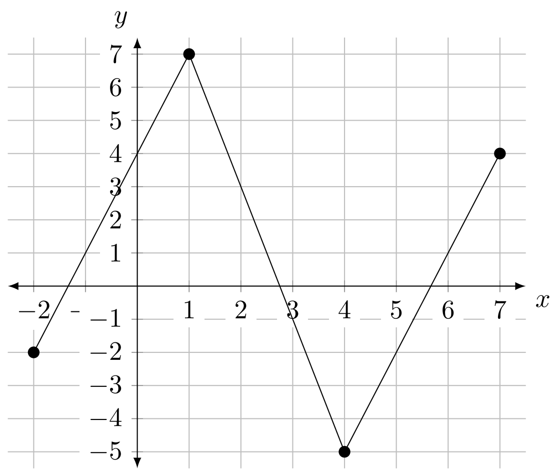
Solution: $h'(0) = f'(g(0))g'(0) = f'(2) \cdot (-2) = (-1) \cdot (-2) = 2$
Then the equation of the tangent line is, by point-slope,

$$y - (8) = 2(x - 0)$$

16. The differentiable function $f(x)$ has the following values and derivatives:

x	1	4	3	-1	-2	1
$f(x)$	5	8	11	-1	7	3
$f'(x)$	-5	9	7	-10	-4	8

The function $g(x)$ is shown below:



Graph of g

If $h(x) = f(g(x))$, find the equation of the tangent line to $h(x)$ at $x = 2$.

Solution: $h'(2) = f'(g(2))g'(2) = f'(3) \cdot (-4) = (7) \cdot (-4) = -28$

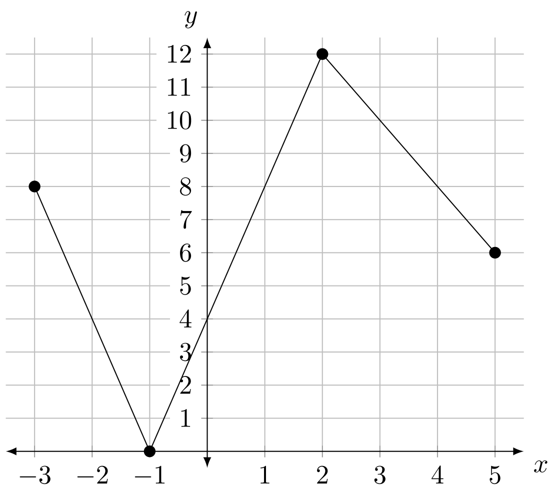
Then the equation of the tangent line is, by point-slope,

$$y - (11) = -28(x - 2)$$

17. The differentiable function $f(x)$ has the following values and derivatives:

x	4	0	4	8	10	8
$f(x)$	1	-6	9	-10	4	-7
$f'(x)$	4	-2	8	1	-10	-6

The function $g(x)$ is shown below:



Graph of g

If $h(x) = f(g(x))$, find the equation of the tangent line to $h(x)$ at $x = 0$.

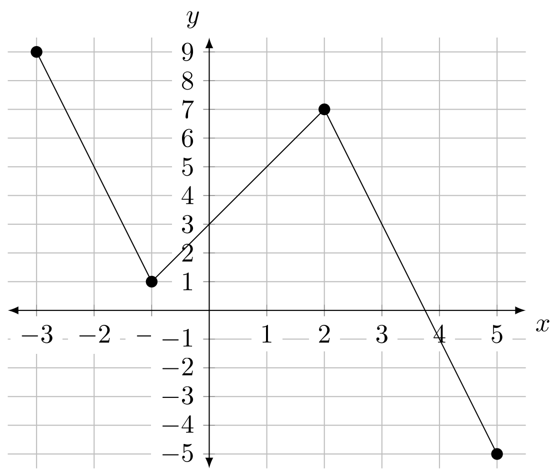
Solution: $h'(0) = f'(g(0))g'(0) = f'(4) \cdot (4) = (8) \cdot (4) = 32$
Then the equation of the tangent line is, by point-slope,

$$y - (9) = 32(x - 0)$$

18. The differentiable function $f(x)$ has the following values and derivatives:

x	5	1	3	5	3	-1
$f(x)$	-7	10	8	-2	6	1
$f'(x)$	9	-1	-2	-11	-3	-6

The function $g(x)$ is shown below:



Graph of g

If $h(x) = f(g(x))$, find the equation of the tangent line to $h(x)$ at $x = 0$.

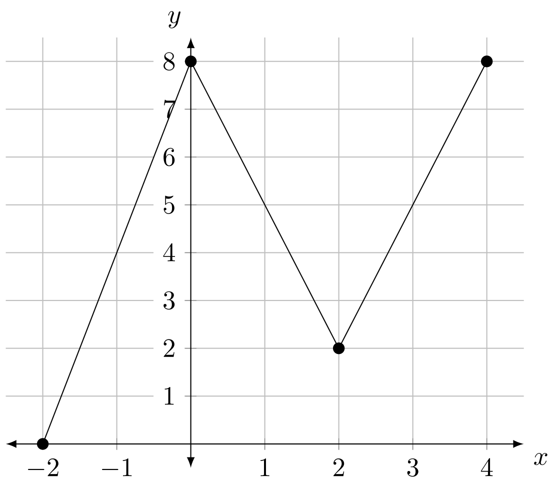
Solution: $h'(0) = f'(g(0))g'(0) = f'(3) \cdot (2) = (-2) \cdot (2) = -4$
Then the equation of the tangent line is, by point-slope,

$$y - (8) = -4(x - 0)$$

19. The differentiable function $f(x)$ has the following values and derivatives:

x	4	8	5	2	5	8
$f(x)$	-2	-4	8	-1	7	5
$f'(x)$	4	-1	-10	-5	-8	-11

The function $g(x)$ is shown below:



Graph of g

If $h(x) = f(g(x))$, find the equation of the tangent line to $h(x)$ at $x = 1$.

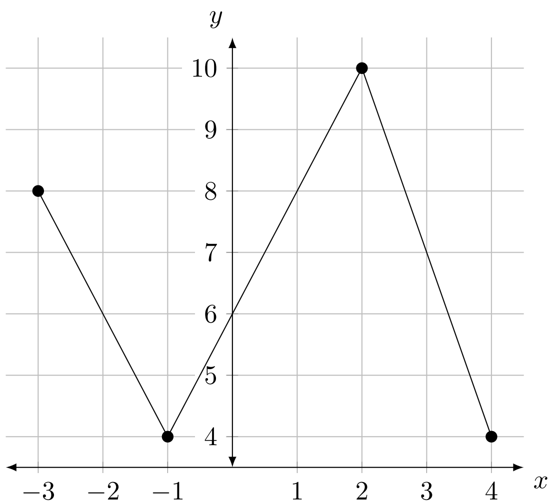
Solution: $h'(1) = f'(g(1))g'(1) = f'(5) \cdot (-3) = (-10) \cdot (-3) = 30$
Then the equation of the tangent line is, by point-slope,

$$y - (8) = 30(x - 1)$$

20. The differentiable function $f(x)$ has the following values and derivatives:

x	6	4	6	8	7	4
$f(x)$	-1	-3	9	11	-4	10
$f'(x)$	9	8	7	4	6	3

The function $g(x)$ is shown below:



Graph of g

If $h(x) = f(g(x))$, find the equation of the tangent line to $h(x)$ at $x = 0$.

Solution: $h'(0) = f'(g(0))g'(0) = f'(6) \cdot (2) = (7) \cdot (2) = 14$
Then the equation of the tangent line is, by point-slope,

$$y - (9) = 14(x - 0)$$