



Algebra & Functions (Maths 201-016)

Functions

1. Given $f(x) = 2x^2 + 7x + 9$ and $g(x) = 4 - 5x$, find the following:

- (a) $f(-1)$
- (b) $g(-2)$
- (c) the values of x for which $g(x) = 0$
- (d) $f(2) - g(-2)$

2. Given $f(x) = -3x^2 + 2x + 4$, find the following:

- (a) $f(-2)$
- (b) $f(2) - f(1)$
- (c) the values of x for which $f(x) = 4$

3. Given $f(x) = -x^2 - 6x + 16$ and $g(x) = 2 - 5x$, find the following:

- (a) $f(-2)$
- (b) the values of x for which $f(x) = 0$
- (c) $f(\frac{1}{2}) - g(\frac{1}{3})$

4. Given $f(x) = x^2 + 5x$ and $g(x) = 2 - 5x$, find the following:

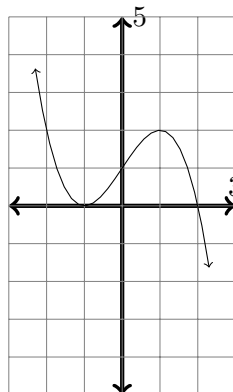
- (a) $f(\frac{1}{2})$
- (b) the values of x for which $f(x) = 0$
- (c) $f(-2) - g(\frac{1}{3})$

5. Given $f(x) = x^2 + 6x + 4$, find the following:

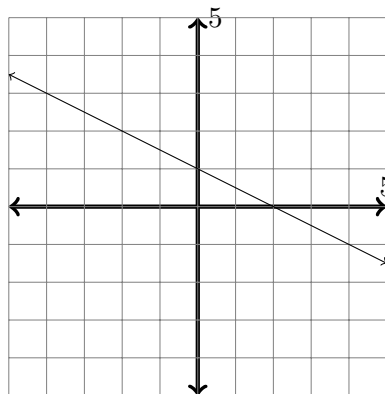
- (a) $f(2)$
- (b) $f(\frac{1}{3})$
- (c) $f(a + h)$
- (d) the values of x for which $f(x) = -4$

Find the (a) domain, (b) range, (c) intercepts, and (d) local extrema of the following functions.

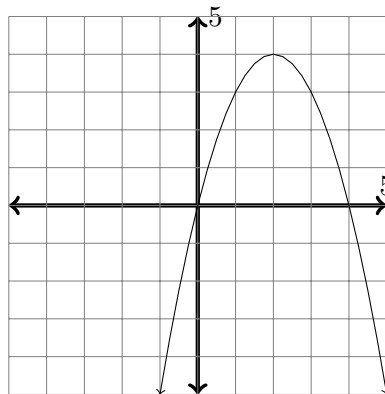
6. .



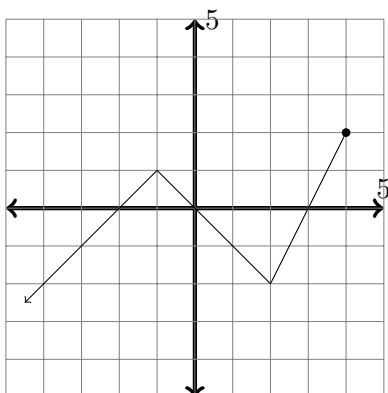
7. .



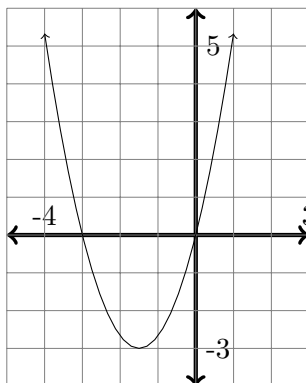
8. .



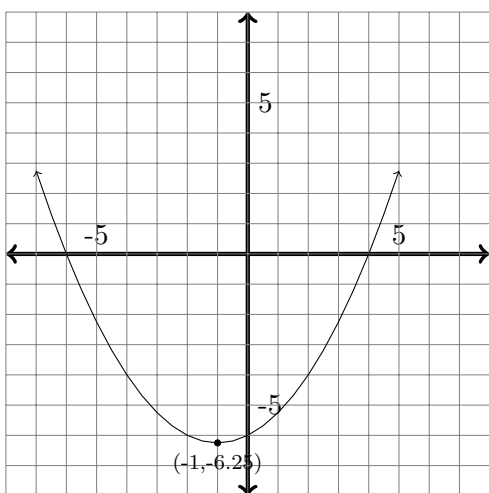
9. .



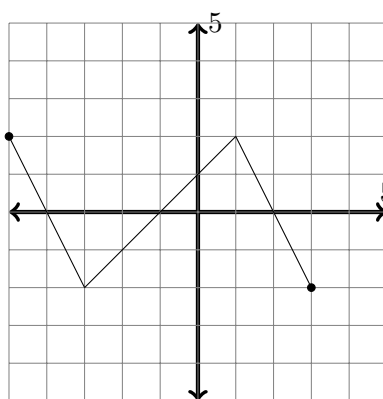
12. .



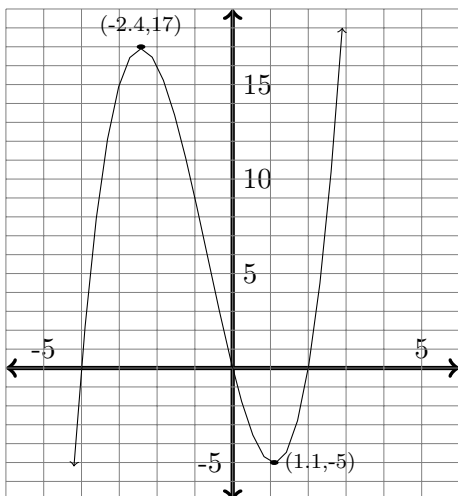
10. .



13. .



11. .



Remember: a dot indicates the graph “stops”;
an arrow indicates the graph continues.

Answers

1. (a) 4 (b) 14 (c) $4/5$ (d) 17
2. (a) -12 (b) -7 (c) $0, 2/3$
3. (a) 24 (b) $-8, 2$ (c) $47/4$
4. (a) $11/4$ (b) $-5, 0$ (c) $-17/3$
5. (a) 12 (b) $-17/9$ (c) $a^2 + 2ah + h^2 + 6a + 6h + 4$ (d) $-4, -2$

The functions:

	domain	range	x -intercept	y -intercept	local max	local min
6.	$\mathbb{R}$	$\mathbb{R}$	$-1, 2$	1	$(1, 2)$	$(-1, 0)$
7.	$\mathbb{R}$	$\mathbb{R}$	2	1	none	none
8.	$\mathbb{R}$	$y \leq 4$	$0, 4$	0	$(2, 4)$	none
9.	$x \leq 4$	$y \leq 2$	$-2, 0, 3$	0	$(-1, 1)$	$(2, -2)$
10.	$\mathbb{R}$	$y \geq -6.25$	$-6, 4$	-6	none	$(-1, -6.25)$
11.	$\mathbb{R}$	$\mathbb{R}$	$-4, 0, 2$	0	$(-2.4, 17)$	$(1.1, -5)$
12.	$\mathbb{R}$	$y \geq -3$	-3.0	0	none	$(-1.5, -3)$
13.	$-5 \leq x \leq 3$	$-2 \leq y \leq 2$	$-4, -1, 2$	1	$(1, 2)$	$(-3, -2)$

Note: $\mathbb{R}$ means all real numbers. A decimal point is denoted “.”; so 2.5 means “2 point 5” or $2\frac{1}{2}$. The comma in brackets means an ordered pair (x, y) , so $(-1, -6.25)$ means the ordered pair $x = -1$ and $y = -6.25 = -6\frac{1}{4}$ for example.