

Name:
Algebra 2

Date:

Midterm Review Problems – Worksheet # 1

Sketch each of the following graphs.

- If the graph is quadratic or absolute value, your sketch should include the coordinates of the vertex, the y-intercept, and any x-intercepts.
- For all other functions, you only need to include the coordinates of the y-intercept and the x-intercept(s).
- Make sure end behavior is correct!
- Do all graphs by hand first, then you may check your answers using your calculator.

1. $f(x) = -(x + 3)^2 + 10$

2. $f(x) = 2x^2 - 16x + 30$

3. $f(x) = (x - 3)(x - 4)$

4. $f(x) = (x + 5)(x - 7)^2$

5. $f(x) = 7 - \frac{1}{2}x$

6. $f(x) = 3|x + 1| - 4$

7. $f(x) = -(x^2 + 8x + 16)$

8. $f(x) = 2x(x - 5)$

9. $f(x) = x^4 + 3x^2 - 28$

10. $f(x) = x^2 - 12$

11. $f(x) = 3$

12. $x = -4$

13. $f(x) = 3|x| - 1$

14. $f(x) = x^2 + x - 7$

15. $f(x) = -2x(x - 3)^2(x - 6)^2$

16. $f(x) = (x + 6)(x + 6)$

17. $f(x) = x^3 - 2x^2 - 9x + 18$

18. $f(x) = -(x + 5)(x^2 + 4x - 5)$

Answers

Problem #	Vertex (If quadratic or absolute value function)	x-intercepts	y-intercept
1	(-3, 10)	$-3 \pm \sqrt{10}$	1

2	(4, -2)	3, 5	30
3	$\left(\frac{7}{2}, -\frac{1}{4}\right)$	3, 4	12
4		-5, 7 (double root)	245
5		14	7
6	(-1, -4)	$\frac{1}{3}, -\frac{7}{3}$	-1
7	(-4, 0)	-4 (double root)	-16
8	$\left(\frac{5}{2}, -\frac{25}{2}\right)$	0, 5	0
9		$\pm 2, \pm i\sqrt{7}$ (the solutions with i are not x-intercepts; but they are zeros)	-28
10	(0, -12)	$\pm 2\sqrt{3}$	-12
11		It is a horizontal line. It does not cross the x-axis.	3
12		-4	It is a vertical line. It does not cross the y-axis.
13	(0, -1)	$\pm \frac{1}{3}$	-1
14	$\left(-\frac{1}{2}, -\frac{29}{4}\right)$	$\frac{-1 \pm 29}{2}$	-7
15		0, 3 (double), 6 (double)	0
16	(-6, 0)	-6 (double)	36
17		2, -3, 3	18
18		-5 (double), 1	25