

Name: Key

Alg 2 Quadratics and Complex Numbers Review

Simplify.

1. $\sqrt{75}$
 $\sqrt{25 \cdot 3}$
 $5\sqrt{3}$

2. $\sqrt{-96}$
 $\sqrt{-1 \cdot 16 \cdot 6}$
 $4i\sqrt{6}$

3. $\sqrt{28}$
 $\sqrt{4 \cdot 7}$
 $2\sqrt{7}$

2. $\sqrt{162}$
 $\sqrt{81 \cdot 2}$
 $9\sqrt{2}$

5. $\sqrt{-245}$
 $\sqrt{-1 \cdot 49 \cdot 5}$
 $7i\sqrt{5}$

6. $\sqrt{-35}$
 $\sqrt{-1 \cdot 35}$
 $i\sqrt{35}$

7. $4i \cdot 12i$
 $48i^2$
 -48

8. $5i \cdot -6i$
 $-30i^2$
 30

9. $-7i \cdot -3i$
 $21i^2$
 -21

10. i^{13}
 $(i^2)^6 i$
 $(-1)^6 i$ i

11. i^{51}
 $(i^2)^{25} i$
 $(-1)^{25} i$ $-i$

12. i^{76}
 $(i^2)^{38}$
 $(-1)^{38}$ 1

13. $(7i - 8) + (18 + 2i)$
 $9i - 26$

14. $(10 - 5i) + (2i + 13)$
 $-7i - 3$

15. $(4 - 3i) + (5 + 7i)$
 $4i + 9$

16. $(2 + 10i) + (6 - 7i)$
 $3i + 8$

17. $(-6i + 1) + (3 - 4i)$
 $-10i + 4$

18. $(-i - 8) + (21 - 21i)$
 $-22i + 13$

19. $(1 + 3i)(5 + 8i)$
 $5 + 8i + 15i + 24i^2$
 -24
 $23i - 19$

20. $(3 - 7i)(4 - 2i)$
 $12 - 6i - 28i + 14i^2$
 -14
 $-34i - 2$

21. $(-7 + 6i)(9 - 5i)$
 $-63 + 35i + 54i - 30i^2$
 $+30$
 $89i - 33$

Find the key features (vertex, x- and y-intercepts) and use those to graph.

22. $f(x) = x^2 + 2x + 6$

Vertex: $(-1, 5)$

y-intercept: $(0, 6)$

x-intercept(s): $\frac{-2 \pm \sqrt{2^2 - 4(1)(6)}}{2(1)}$
 $\rightarrow \sqrt{-20}$
 $\frac{-2 \pm \sqrt{-20}}{2}$
 $\frac{-2 \pm 2i\sqrt{5}}{2}$
 $-1 \pm i\sqrt{5}$

23. $f(x) = -(x - 1)(x + 5)$

Vertex: $(-2, 9)$

y-intercept: $(0, 5)$

x-intercept(s): $x = 1$
 $x = -5$

24. $f(x) = \frac{1}{4}(x - 2)^2 - 1$

Vertex: $(2, -1)$

y-intercept: $(0, 0)$

x-intercept(s): $x = 0$
 $x = 4$

