SAT PREP
Imaginary / Complex Numbers Practice

Name _____

Date _____

1. **For the complex number $-10+4i$, identify the real number and the imaginary number**.

2. **Evaluate.** a) i^2 b) i^3 c) i^4 d) i^9 e) i^{14}

3. **Write the expression as a complex number in standard form.**
   a) $(5+2i)+(3-2i)$ b) $-i+(7-5i)-3(2-3i)$ c) $(-2+4i)+(3-9i)$
   d) $(-2+4i)-(3+9i)$ e) $(5-2i)-2(3+i)$ f) $3i(6-5i)$
   g) $i(2+i)$ h) $(2+3i)(1-4i)$ i) $(-3+7i)(1-2i)$
   j) $(3-2i)^2$ k) $(2i)(1-4i)(1+i)$

4. **Solve each equation.**
   a) $x^2=-60$ b) $4x^2+20=0$ c) $6x^2+1=-5$
   d) $3(x-1)^2=-27$ e) $(x+5)^2+10=2$ f) $5(2x+8)^2=-80$

Answers

1. Real number: -10; Imaginary number: $4i$
2. A) $-2-4i$ B) $-7i$ C) 5 D) $3+2i$
3. a) -1 b) $-i$ c) 1
4. a) 8 b) $1+3i$ c) $1-5i$ d) $-5-5i$ e) $-1-4i$ f) $15+18i$ g) $-1+2i$
   h) $14-5i$ i) $11+13i$ j) $13-12i$ k) $(2i)(1-3i-4i^2)=(2i)(5-3i)=(10i-6i^2)=6+10i$
5. a) $\frac{5-5i}{2}$ b) $\frac{3}{4}+\frac{3i}{4}$ c) $\frac{4}{7}-\frac{2i}{7}$ d) $\frac{52-11i}{25}$ e) $\frac{28+44i}{85}$
6. a) $\sqrt{29}$ b) $\sqrt{41}$ c) $\sqrt{26}$ d) $\sqrt{5}$ e) 5
7. a) $\pm i\sqrt{5}$ b) $\pm i\sqrt{3}$ c) $-2\pm 4i$ d) $4\pm i\sqrt{19}$ e) $-2\pm 5i$ f) $-4\pm 3i$ g) $-\frac{1}{4}\pm\frac{3i}{4}$
   h) $\frac{2}{3}\pm\frac{i\sqrt{2}}{6}$