11/12 Try these:

Simplify:

1. $\sqrt{153}$ $9 < 17$ $3\sqrt{17}$

2. $5\sqrt{24} \cdot 2\sqrt{28}$ $5 \cdot 2 \cdot 2\sqrt{6} \cdot 2\sqrt{7}$ $\boxed{40\sqrt{42}}$

3. $\sqrt{\frac{7}{9}} \cdot \sqrt{\frac{4}{7}} = \frac{\sqrt{7}}{\sqrt{9}} \cdot \frac{\sqrt{4}}{\sqrt{7}} = \frac{\sqrt{28}}{\sqrt{9}} = \frac{2\sqrt{7}}{\sqrt{9}} = \frac{2}{3}$

4. $\sqrt{24} \cdot \frac{80}{\sqrt{192}}$ $\boxed{20\sqrt{2}}$

$\frac{80 \cdot 2\sqrt{6}}{2 \cdot 2 \cdot 2\sqrt{3}} = \frac{80\sqrt{6}}{4\sqrt{3}}$

$= \frac{80}{4}\sqrt{\frac{6}{3}}$

$20\sqrt{2}$

11/12 Sec. 1.6 Performing Operations with Complex Numbers

imaginary number (unit) $\boxed{i} = \sqrt{-1}$

simplified

$i^2 = \boxed{-1}$ real

$(i)^2 = (\sqrt{-1})^2$

$i^2 = -1$

complex number standard form $a + bi$, a+b are real numbers

a → real part

bi → imaginary part

$a + bi = c + di$ if and only if

$a = c$ (real)

and

$b = d$ (imag)

Sum: $(a+bi)+(c+di)=(a+c)+(b+d)i$

Difference: $(a+bi)-(c+di)=(a-c)+(b-d)i$

$-c-di$

Ex: Write the expression as a complex number in standard form.

a. $(12-11i)+(-8+3i)$ $\quad 4-8i$

b. $(15-9i)-(24-9i)$

$15-9i-24+9i = -9+0i$

-9

c. $35-(13+4i)+i$

$35-13-4i+i$

$22-3i$

d. $-5i(8-9i)$

$-40i + 45i^2$

$-40i + 45(-1)$

$-40i - 45$

$\boxed{-45 - 40i}$ complex #

p. 45 (13-25) odd