Section 5.2F

page 24

PEMDAS ★ $\sqrt{x^2}=|x|$ ★

#1 – 10: Solve by using square roots. Leave your answer in simplest radical form.

Tammi

1) $3x^2 = 108$

$\frac{3x^2}{3} = \frac{108}{3}$

$|x| = \sqrt{36}$

$x = \pm 6$

Caroline

2) $3x^2 = 90$

$\frac{3x^2}{3} = \frac{90}{3}$

$\sqrt{x^2} = \sqrt{30}$

$|x| = \sqrt{30}$

$x = \pm\sqrt{30}$

1 30
2 15
5 6

page 24

#1 – 10: Solve by using square roots. Leave your answer in simplest radical form.

Anna

3) $2x^2 + 5 = 41$

$-5 \quad -5$

$\frac{2x^2}{2} = \frac{36}{2}$

$\sqrt{x^2} = \sqrt{18}$

$|x| = 3\sqrt{2}$

$x = \pm 3\sqrt{2}$

Lexa

4) $-x^2 - 12 = -87$

$+12$

$\frac{-x^2}{-1} = \frac{-75}{-1}$

$\sqrt{x^2} = \sqrt{75}$ $\quad |x| = 5\sqrt{3}$

$x = \pm 5\sqrt{3}$

PEMDAS

page 29

Not all quadratic equations have real number solutions. Solve the following equations to find their real or complex solutions.

3) $(2x-35)^2+81=0$

$-81 \quad -81$

$\sqrt{(2x-35)^2}=\sqrt{-81}$

$|2x-35|=9i$

$2x-35=9i \qquad 2x-35=-9i$

$+35 \quad +35$

Solve for x.

$\frac{2x}{2}=\frac{35+9i}{2} \qquad \frac{2x}{2}=\frac{35-9i}{2}$

$x=\frac{35+9i}{2} \qquad x=\frac{35-9i}{2}$

$x=\frac{35\pm 9i}{2}$

4) $\frac{1}{4}(x-8)^2=7$

$\cdot 4 \quad \cdot 4$

$\sqrt{(x-8)^2}=\sqrt{28}=\sqrt{4}\sqrt{7}$

$|x-8|=2\sqrt{7}$

$x-8=2\sqrt{7} \qquad x-8=-2\sqrt{7}$

$+8 \quad +8 \qquad +8 \quad +8$

$x=8+2\sqrt{7} \qquad x=8-2\sqrt{7}$

$x=8\pm 2\sqrt{7}$

page 29

Not all quadratic equations have real number solutions. Solve the following equations to find their real or complex solutions.

5) $5(x-7)^2=-135$

$\frac{5}{} \qquad \frac{5}{}$

$\sqrt{(x-7)^2}=\sqrt{-27}$

$|x-7|=\pm\sqrt{3}\cdot\sqrt{9}$

$|x-7|=3i\sqrt{3}$

$x-7=3i\sqrt{3} \qquad x-7=-3i\sqrt{3}$

$+7 \quad +7 \qquad +7 \quad +7$

$x=7\pm 3i\sqrt{3}$

6) $(x+1)^2-24=75$

PEMDAS