

Do Now

Simplify the following:

1) $x^2 \cdot x^2$

5) $-2 \cdot -2$

2) $x^3 \cdot x^3$

6) $-2 \cdot -2 \cdot -2$

3) $x^4 \cdot x^4 \cdot x$

7) $-2 \cdot -2 \cdot -2 \cdot -2$

4) $(x^7)^2$

8) $-2 \cdot -2 \cdot -2 \cdot -2 \cdot -2$

Complete the following:

5) $m^6 = (\quad)^2$

7) $d^{40} = (\quad)^2$

6) $j^4 = (\quad)^2$

11.5

Square Roots of Variable Expressions

Solving with Square Roots

What can x equal to here?

$$x^2 = 9$$

$$4x^2 = 100$$

Hmmm.....

$$\sqrt{25} = 5$$

$$\sqrt{5^2} = 5 \quad \sqrt{(-5)^2} = 5$$

Hmmm.....

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

Hmmm.....

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

Practice

1) $\sqrt{a^2}$

2) $\sqrt{b^4}$

No matter what b is,
 b^2 is always positive

Practice

3) $\sqrt{(c^6)}$

4) $\sqrt{d^8}$

No matter what d is,
 d^2 is always positive

When to Absolute Value Signs

If you simplify a root and the variable has an ODD exponent
PUT ABSOLUTE VALUE SIGNS
AROUND IT.

If you simplify a root and the variable has an EVEN exponent
LEAVE IT ALONE.

Practice

5) $\sqrt{144x^2}$

6) $\sqrt{25n^{12}}$

Practice

7) $\sqrt{64k^6}$

Practice

8) $\sqrt{50a^3}$

Practice

$$9) -\sqrt{98n^7}$$

Practice

$$10) \sqrt{64x^2y^2}$$

Practice

$$11) \pm\sqrt{48x^2y^3}$$

Practice

$$12) \sqrt{\frac{x^6}{49}}$$

Practice

$$13) \sqrt{\frac{x^4y^4}{64}}$$

Practice

$$14) \sqrt{m^2 - 8m + 16}$$

Practice

$$15) \sqrt{m^2 - 14m + 49}$$

Solving Practice

$$16) 4x^2 = 25$$

Solving Practice

$$17) 49z^2 - 9 = 0$$