

pp. 64-65 Radicals

p. 64 PERFECT SQUARES

Complete the following:

$1^2 = 1$

$2^2 = 4$

$3^2 = 9$

$4^2 = 16$

$5^2 = 25$

$6^2 = 36$

$7^2 = 49$

$8^2 = 64$

$9^2 = 81$

$10^2 = 100$

$11^2 = 121$

$12^2 = 144$

$$\begin{aligned} (x^1)^2 &= x^2 \\ (x^2)^2 &= x^4 \\ (x^3)^2 &= x^6 \\ (x^4)^2 &= x^8 \\ (x^5)^2 &= x^{10} \end{aligned}$$



Simplifying Radical Expressions

p.65

Radical Expression: an expression that contains a square root.

Radicand: the number beneath the radical sign

radical sign

coefficient $\rightarrow 2\sqrt{5}$ \leftarrow radicand



Simplifying Square Roots

Steps

- 1) Write the factors of the radicand.
- 2) Circle pairs (perfect squares).
- 3) Write the circle number outside of the radical sign.
(The rest stays under as a product.)
- 4) Multiply by the coefficient.

1) $\sqrt{12}$

4 \wedge 3

2 2 \cdot $2\sqrt{3}$

2) $3\sqrt{90}$

30 3

5 6

2 3

$3 \cdot 3 \sqrt{5 \cdot 2}$

$9\sqrt{10}$

3) $\sqrt{-72}$

-1 72

9 8

3 3 2 4

2 2

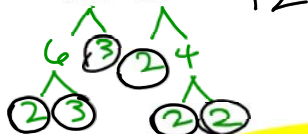
$\sqrt{-1} = i$

$6i\sqrt{2}$

Properties to help us simplify radicals:

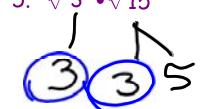
1

4) $\sqrt{18} \cdot \sqrt{8} = 12$



5. $\sqrt{3} \cdot \sqrt{15}$

$3\sqrt{5}$



2

6) $\sqrt{\frac{16}{25}} = \frac{\sqrt{16}}{\sqrt{25}}$

$\frac{4}{5}$

7) $\sqrt{\frac{23}{36}} = \frac{\sqrt{23}}{\sqrt{36}}$

$\frac{\sqrt{23}}{6}$