15.1a – Simplifying Radicals with Variables

Simplify the following radicals. $\sqrt{x^2} = x$

1. $\sqrt{x^4} =$

$\sqrt{\underline{x^2} \cdot \underline{x^2}} =$
$x \cdot x =$
x^2

2. $\sqrt{36x^8} =$

$6\sqrt{\underline{x^2} \cdot \underline{x^2} \cdot \underline{x^2} \cdot \underline{x^2}} =$
$6 \cdot x \cdot x \cdot x \cdot x =$
$6x^4$

3. $\sqrt{98x^9y^4} =$

$7\sqrt{2 \cdot \underline{x^8} \cdot x \cdot \underline{y^4}} =$
$7x^4y^2\sqrt{2x}$

$2\underline{)98}$
$7\underline{)49}$
7

4. $5\sqrt{300x^{16}} =$

$5 \cdot 10\sqrt{3x^{16}} =$
$50x^8\sqrt{3}$

$3\underline{)300}$
$10\underline{)100}$
10

5. $\sqrt{x^5} =$

$\sqrt{\underline{x^4} \cdot x} =$
$x^2\sqrt{x}$

6. $\sqrt{24x^7} =$

$2\sqrt{6\underline{x^6} \cdot x} =$
$2x^3\sqrt{6x}$

$2\underline{)24}$
$2\underline{)12}$
$2\underline{)6}$
3

7. $\sqrt{72x^9y^{13}} =$

$6\sqrt{2\underline{x^8} \cdot x \cdot \underline{y^{12}} \cdot y} =$
$6x^4y^6\sqrt{2xy}$

$2\underline{)72}$
$6\underline{)36}$
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