Homework Review - 11.2

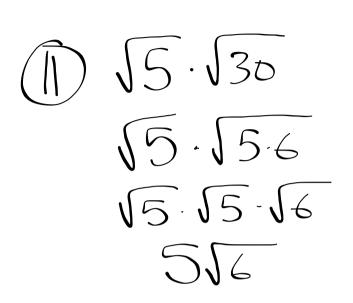$$\widehat{45} \quad (\sqrt{7} + \sqrt{3})(6 + \sqrt{8})$$

$$6\sqrt{7} + \sqrt{7}\sqrt{8} + 6\sqrt{3} + \sqrt{3}\sqrt{8}$$

$$6\sqrt{7} + \sqrt{7 \cdot 2 \cdot 4} + 6\sqrt{3} + \sqrt{3 \cdot 2 \cdot 4}$$

$$6\sqrt{7} + 2\sqrt{14} + 6\sqrt{3} + 2\sqrt{6}$$

$$6\sqrt{3} + 2\sqrt{6} + 6\sqrt{7} + 2\sqrt{14}$$

(11) $\quad \sqrt{5} \cdot \sqrt{30}$

$\sqrt{5} \cdot \sqrt{5 \cdot 6}$

$\sqrt{5} \cdot \sqrt{5} \cdot \sqrt{6}$

$5\sqrt{6}$

$$\sqrt{\frac{8}{3n^3}} = \frac{\sqrt{8}}{\sqrt{3n^3}} = \frac{\sqrt{4 \cdot 2}}{\sqrt{3n \cdot n^2}} =$$

$$\frac{2\sqrt{2}}{n\sqrt{3n}} \cdot \frac{\sqrt{3n}}{\sqrt{3n}} = \frac{2\sqrt{2 \cdot 3n}}{n \cdot \sqrt{3n} \cdot \sqrt{3n}} =$$

$$\boxed{\frac{2\sqrt{6n}}{3n^2}}$$

$$37) \quad 9\sqrt{32} + \sqrt{2}$$

$$9\sqrt{16 \cdot 2} + \sqrt{2}$$

$$9 \cdot 4\sqrt{2} + \sqrt{2}$$

$$36\sqrt{2} + \sqrt{2}$$

$$\boxed{37\sqrt{2}}$$

$$r = \sqrt{\frac{V_2}{V_0}} - 1$$

$V_0 = \text{initial } (225)$

$V_2 = \text{after 2 yrs } (270)$

$$r = \sqrt{\frac{270}{225}} - 1$$

$$0.095 = 9.5\%$$

Exponents and exponent properties

$$x^2 \qquad y^5 \qquad g^{-\frac{1}{8}}$$

Exponents are a superscripted number

$$x^4 = x \cdot x \cdot x \cdot x$$

$$3^3 = 3 \cdot 3 \cdot 3$$

They show repeated multiplications of the same number

$$(4xy)^4 = 4xy \cdot 4xy \cdot 4xy \cdot 4xy$$

$$(3x - 2y)^3 = (3x-2y)(3x-2y)(3x-2y)$$

Product of Powers Property:

$$a^m \bullet a^n = a^{m+n}$$

What is it?

$$3^2 \cdot 3^4$$

Why does it work?

$$3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3$$

$$3^6$$

How is it used?

$$X^2 \cdot X^3 \cdot X^5 =$$

$$X^{10}$$

Power of a Power Property:

$$(a^m)^n = a^{m \cdot n}$$

What is it?

$$(x^2)^3$$

Why is it true?

$$x^2 \cdot x^2 \cdot x^2$$

$$x \cdot x \cdot x \cdot x \cdot x \cdot x$$

$$x^6$$

How is it used?

$$(a^3)^4 = a^{12}$$

Power of a Product Property:

$$(ab)^m = a^m b^m$$

What is it?

$(xy)^3$

$xy \cdot xy \cdot xy$

$x \cdot x \cdot x \cdot y \cdot y \cdot y$

$x^3 y^3$

Why does it work?

How is it used?

$$(2xy^2)^3 = 2^3 \cdot x^3 \cdot (y^2)^3$$
$$= 8x^3 y^6$$

Quotient of Powers Property:

$$\frac{a^m}{a^n} = a^{m-n}$$

What is it?

$$\frac{x^7}{x^3} = \frac{x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x}{x \cdot x \cdot x}$$

Why does it work?

$$= x^4$$

How is it used?

$$\frac{a^4 b^2 c}{a^3 b} = abc$$

$$\frac{5 \cdot 4 \cdot 3}{4 \cdot 2} = \frac{15}{2}$$

Power of a Quotient Property:

$$\left(\frac{a}{b}\right)^m = \frac{a^m}{b^m}$$

What is it?

Why is it true?

$$\left(\frac{x}{y}\right)^3 = \left(\frac{x}{y}\right)\left(\frac{x}{y}\right)\left(\frac{x}{y}\right)$$

$$= \frac{x^3}{y^3}$$

How is it used?

$$\left(\frac{2a^2}{b^3}\right)^4 = \frac{(2a^2)^4}{(b^3)^4} = \frac{16a^8}{b^{12}}$$

13. $x^5 \cdot x^2$

x^7

14. $y^3 \cdot y \cdot y^4$

$y \cdot y \cdot y \cdot y \cdot y \cdot y \cdot y \cdot y$

y^8

17. $(b^7)^2$

b^{14}

18. $[(b + 1)^2]^3$

$(b+1)^6$

$(b+1)(b+1)(b+1)(b+1)(b+1)(b+1)$

~~b+1 > b+1~~

23. $(3m^7)^4 \cdot m^3$

$3^4(m^7)^4 \cdot m^3$

$81 m^{28} \cdot m^3$

$81 m^{31}$

24. $4p^2 \cdot (3p^5)^2$

$4p^2 \cdot 3^2 (p^5)^2$

$4p^2 \cdot 9 p^{10}$

$36 p^{12}$

10. $\dfrac{1}{y^9} \cdot y^{15} = \dfrac{y^{15}}{y^9} = y^6$

11. $z^{16} \cdot \dfrac{1}{z^7}$

12. $\left(\dfrac{a}{b}\right)^8$

13. $\left(-\dfrac{6}{z}\right)^3 = \dfrac{(-6)^3}{z^3} = \dfrac{-216}{z^3}$

14. $\left(\dfrac{a^3}{2b^5}\right)^4 = \dfrac{(a^3)^4}{(2b^5)^4} =$
$\dfrac{a^{12}}{2^4 (b^5)^4} = \dfrac{a^{12}}{16 b^{20}}$

15. $\left(\dfrac{3x^4}{y^6}\right)^5$

16. $\left(\dfrac{m^4}{5n^9}\right)^3 = \dfrac{(m^4)^3}{(5n^9)^3} = \dfrac{m^{12}}{125 n^{27}}$

17. $\left(\dfrac{3x^7}{2y^{12}}\right)^4$

18. $\left(\dfrac{2m^5}{3n^9}\right)^5$

Homework:
p. 492, 3-48 (every 3rd)
p. 498, 3-45 (every 3rd)