3.11 Exponent Laws - Applications

~~p.230~~ 15a) $4^3 = 2^{\square}$

$4 \times 4 \times 4 = 64 \div 2 = 32 \div 2 = 16 \div 2 = 8 \div 2 = 4 \div 2 = 2 \div 2 = 1$

LS $= 4^3 = 64$ RS $= 2^{\square} = 2^6 = 64$

LS = RS

x^y $\wedge$ y^x

base button exponent

$4^3 = 2^6$

LS = RS

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15a) $4^3 = 2^{\square}$

15 $4^3 = (2 \times 2)^3$

$= (2^2)^3 = 2^6$ Power Rule

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15b)

$6^9 = 216^{\square}$

LS

$6^9 = 10077696 \div 216$

$= 46656 \div 216$

$= 216 \div 216$

$= 1$

RS

$= 216^3$

LS = RS

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17 b) common base

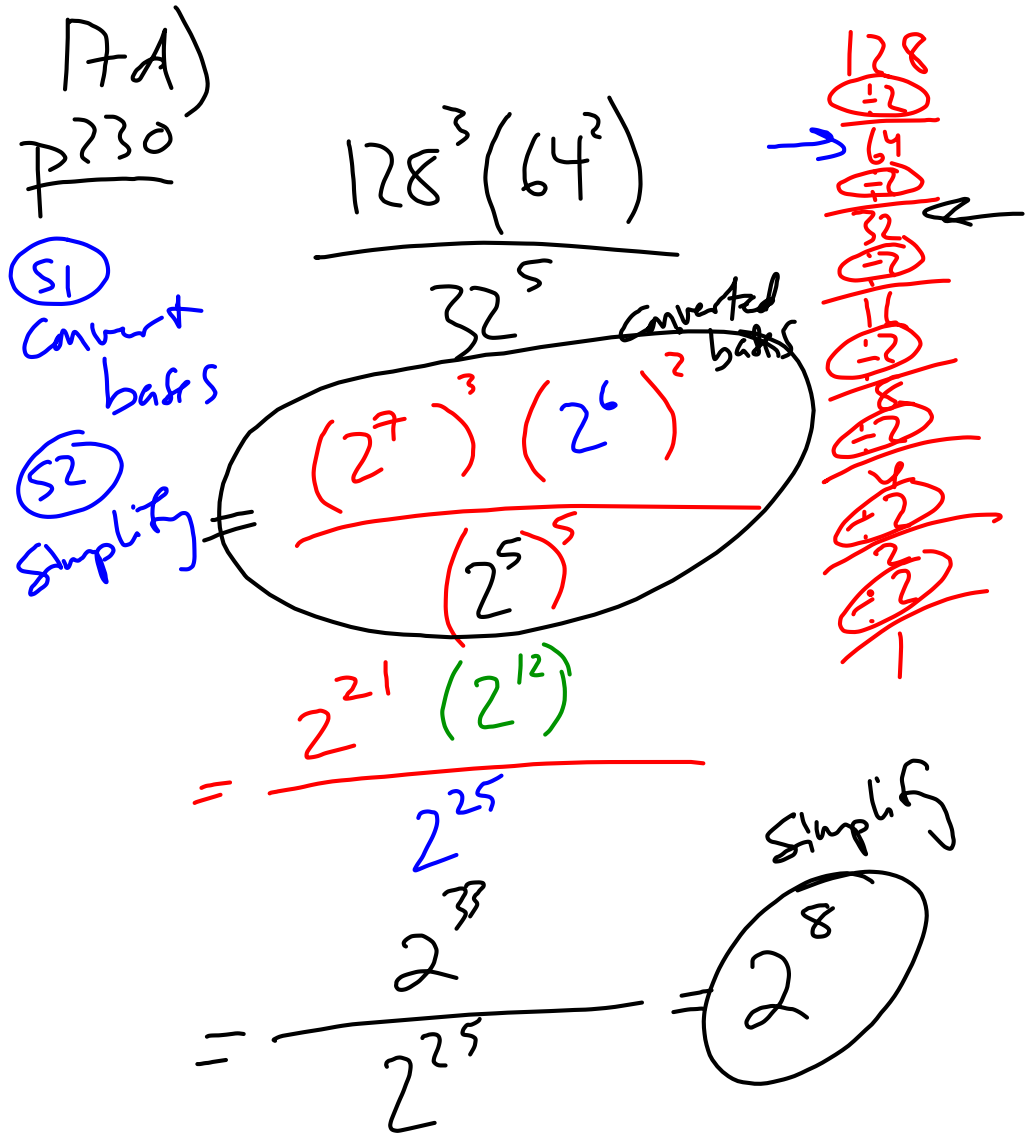
$$\frac{25^4}{5^5} = \frac{(5^2)^4}{5^5} = \frac{5^8}{5^5}$$

Simplify

$$= 5^3$$

$= 5 \times 5 \times 5$ evaluate

$= 125$


7A)
P^{230}
$\frac{128^3(64^2)}{32^5}$
S1
Convert bases
Converted bases
S2
Simplify
$\frac{(2^7)^3(2^6)^2}{(2^5)^5}$
128
64
32
16
8
4
2
1
$= \frac{2^{21}(2^{12})}{2^{25}}$
Simplify
$= \frac{2^{33}}{2^{25}} = 2^8$

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#18 a)

$2 \times 3 \times 4$

$= 4 \times 3 \times 2$

$(x^3 y^5)(x^4 y^3)$

$= (x^3)(x^4)(y^5)(y^3)$

$= x^7 y^8$ ← Simplify

$$(2x^3y^6)(6x^3y^8)$$

$$= 12x^6y^{14}$$ ← simplified