Math II Name _____ ID: 1

Exponent Properties (w/fractions)

Date _____ Period ____

Simplify.

1) $m^{2} \cdot 2m^{\frac{1}{2}}$ → $2m^{2+\frac{1}{2}}$

$2m^{5/2}$

2) $2x^{\frac{1}{2}} \cdot 2x$ → $2 \cdot 2 \cdot x^{\frac{1}{2}+1}$

$4x^{3/2}$

3) $p^{\frac{1}{2}} \cdot p^{1}$ → $p^{\frac{1}{2}+1}$

$p^{\frac{3}{2}}$

4) $n^{\frac{1}{2}} n^{\frac{1}{2}}$ → $n^{\frac{1}{2}+\frac{1}{2}}$

n^{1}

5) $\left(n^{\frac{1}{2}}\right)^{\frac{1}{2}}$ → $n^{\left(\frac{1}{2}\right)\left(\frac{1}{2}\right)}$

$n^{\frac{1}{4}}$

6) $\left(a^{\frac{3}{2}}\right)^{\frac{3}{2}}$ $a^{\left(\frac{3}{2}\right)\left(\frac{3}{2}\right)}$

$a^{\frac{9}{4}}$

7) $\left(x^{\frac{3}{2}}\right)^{\frac{3}{2}}$ → $x^{\left(\frac{3}{2}\right)\left(\frac{3}{2}\right)}$

$x^{\frac{9}{4}}$

8) $\left(r^{\frac{1}{2}}\right)^{\frac{3}{2}}$ → $r^{\left(\frac{1}{2}\right)\left(\frac{3}{2}\right)}$

$r^{\frac{3}{4}}$

9) $\frac{v^2}{2v^{\frac{3}{2}}}$

$\frac{1}{2}v^{2-\frac{3}{2}}$

$\frac{1}{2}v^{\frac{1}{2}}$ or $\frac{v^{\frac{1}{2}}}{2}$

10) $\frac{2x}{x^{\frac{1}{2}}}$ → $2x^{1-\frac{1}{2}}$

→ $2x^{\frac{1}{2}}$

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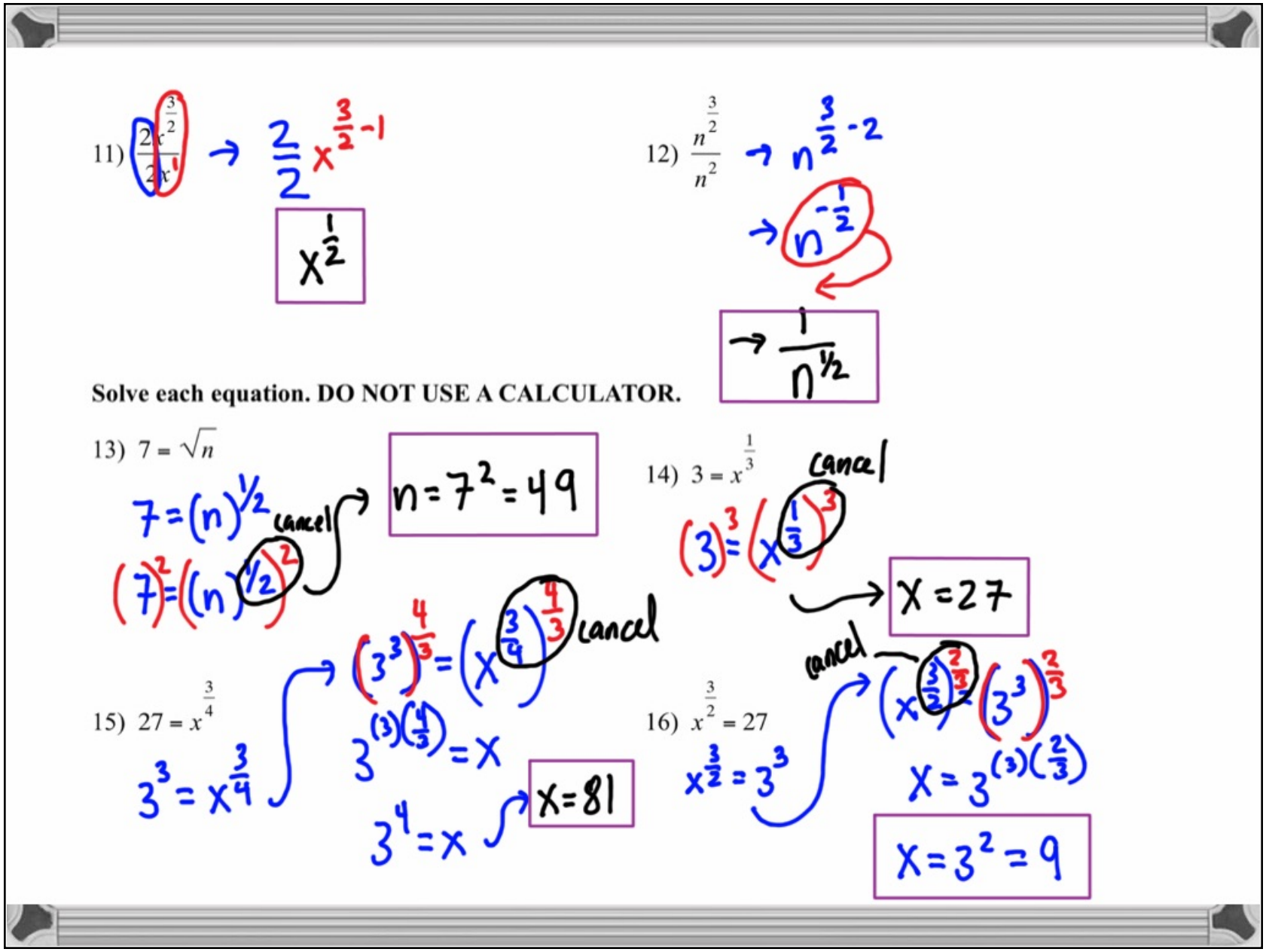
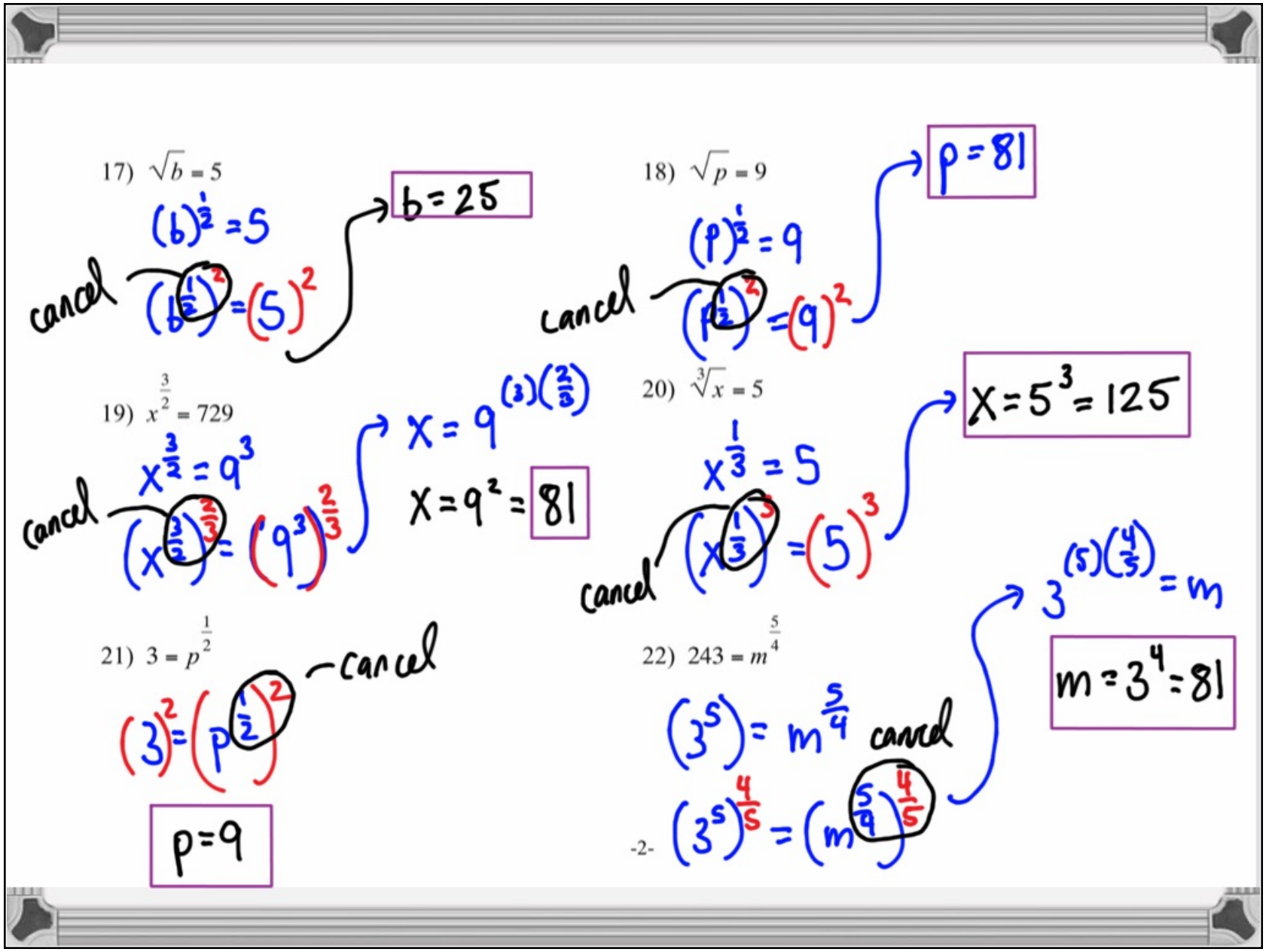

11) $\frac{2x^{\frac{3}{2}}}{2x^{1}}$
$\frac{2}{2}x^{\frac{3}{2}-1}$
$x^{\frac{1}{2}}$
12) $\frac{n^{\frac{3}{2}}}{n^{2}}$
$n^{\frac{3}{2}-2}$
$n^{-\frac{1}{2}}$
$\frac{1}{n^{1/2}}$
Solve each equation. DO NOT USE A CALCULATOR.
13) $7=\sqrt{n}$
$7=(n)^{1/2}$
cancel
$(7)^2=(n)^{1/2\cdot 2}$
$n=7^2=49$
14) $3=x^{\frac{1}{3}}$
cancel
$(3)^3=(x^{\frac{1}{3}})^3$
$x=27$
15) $27=x^{\frac{3}{4}}$
$3^3=x^{\frac{3}{4}}$
$(3^3)^{\frac{4}{3}}=(x^{\frac{3}{4}})^{\frac{4}{3}}$ cancel
$3^{(3)(\frac{4}{3})}=x$
$3^4=x$
$x=81$
16) $x^{\frac{3}{2}}=27$
$x^{\frac{3}{2}}=3^3$
cancel
$(x^{\frac{3}{2}})^{\frac{2}{3}}=(3^3)^{\frac{2}{3}}$
$x=3^{(3)(\frac{2}{3})}$
$x=3^2=9$


17) $\sqrt{b} = 5$
$(b)^{\frac{1}{2}} = 5$
cancel
$(b^{\frac{1}{2}})^2 = (5)^2$
$b = 25$
18) $\sqrt{p} = 9$
$(p)^{\frac{1}{2}} = 9$
cancel
$(p^{\frac{1}{2}})^2 = (9)^2$
$p = 81$
19) $x^{\frac{3}{2}} = 729$
$x^{\frac{3}{2}} = 9^3$
cancel
$(x^{\frac{3}{2}})^{\frac{2}{3}} = (9^3)^{\frac{2}{3}}$
$x = 9^{(3)(\frac{2}{3})}$
$x = 9^2 = 81$
20) $\sqrt[3]{x} = 5$
$x^{\frac{1}{3}} = 5$
cancel
$(x^{\frac{1}{3}})^3 = (5)^3$
$x = 5^3 = 125$
21) $3 = p^{\frac{1}{2}}$
$(3)^2 = (p^{\frac{1}{2}})^2$
-cancel
$p = 9$
22) $243 = m^{\frac{5}{4}}$
$(3^5) = m^{\frac{5}{4}}$
cancel
$(3^5)^{\frac{4}{5}} = (m^{\frac{5}{4}})^{\frac{4}{5}}$
$3^{(5)(\frac{4}{5})} = m$
$m = 3^4 = 81$
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