AAT

Test Notes
ch P. 2

exponent rules

① $x^5 \cdot x^7 = x^{12}$

② $\frac{x^{10}}{x^3} = x^7$

③ $(x^4)^5 = x^{20}$

④ $x^0 = 1$

⑤ $x^{-5} = \frac{1}{x^5}$ OR $\frac{1}{x^{-7}} = x^7$

⑥ $(ab)^x = a^x b^x$

⑦ $\left(\frac{a}{b}\right)^x = \frac{a^x}{b^x}$

Scientific notation

* positive exponent means a big #
* negative exponent means a small #

ex 1 $1020000 \longrightarrow 1.02 \times 10^6$

ex 2 $0.000042 \longrightarrow 4.2 \times 10^{-5}$

Simplify radicals

* look for perfect squares & cubes

how many in a group to escape → $\sqrt[3]{54}$

$= \sqrt[3]{27}\sqrt[3]{2}$

$= \boxed{3\sqrt[3]{2}}$

← no # means hidden 2

$\sqrt[2]{50}$

$= \sqrt{25}\sqrt{2}$

$= \boxed{5\sqrt{2}}$

ex 1 $\sqrt{72x^3} = 6x\sqrt{2x}$

ex 2 $\sqrt[3]{81x^4y^2} = 3x^2(\sqrt[3]{3y^2})$

Combining radicals

<u>add/subtract</u>: you need the same # in the root ($\sqrt{\ }$) then you combine the front #s

<u>multiply</u>: multiply the front #s together & the inside #s together & reduce!

ex 1 $5\sqrt{3} + 10\sqrt{3} = 15\sqrt{3}$

ex 2 $10\sqrt{2} \cdot 3\sqrt{5} = 30\sqrt{10}$

rationalize

* no $\sqrt{\ }$ in the denominator
  → multiply by 1 (hidden)

ex 1 $\frac{2}{\sqrt{3}}\left(\frac{\sqrt{3}}{\sqrt{3}}\right) = \frac{2\sqrt{3}}{3}$