*AAT

Chapter 1: Test Review (IC/HW)

Name: Key

Date: _____ Period: _____

1. If x<0 and y>0, determine the sign of the real number.

x^8y >0

$(-1)^8(1)$

$1 \cdot 1 = +$

2. Simplify.

(7)|6-18| $7|-12| = 7(12) = 84$

3. Rewrite the following expression without using the absolute value symbol and simplify the result.

|6-x| if x < 6 $6-x$

4. Approximate the real-number expression. Express the answer in scientific notation accurate to four significant figures.

$\sqrt{|5.38 - 4.94 \cdot 10^4| + 10^5}$ $= 386.5$

$= 3.865 \times 10^2$

5. Express the number in decimal form.

9.3×10^{-5} 0.000093

6. In astronomy, distances to stars are measured in light years. One light year is the distance a ray of light travels in one year. If the speed of light is approximately 186,000 miles per second, estimate the number of miles in three light years.

$\frac{186{,}000 \text{ miles}}{\text{sec}} \cdot \frac{60 \text{ sec}}{1 \text{ min}} \cdot \frac{60 \text{ min}}{1 \text{ hr}} \cdot \frac{24 \text{ hr}}{1 \text{ day}} \cdot \frac{365 \text{ days}}{1 \text{ year}} \cdot 3 \text{ years}$

$= 1.76 \times 10^{13}$

7. Simplify the expression. $\left(-\frac{32x^5}{y^{-10}}\right)^{\frac{2}{5}}$

$\left(\sqrt[5]{\frac{-32x^5}{y^{-10}}}\right)^2 = \left(\sqrt[5]{-32x^5y^{10}}\right)^2 = (-2xy^2)^2 = 4x^2y^4$

8. Simplify the expression. $\frac{(x^{18}y^9)^{\frac{-1}{9}}}{(x^{10}y^5)^{\frac{1}{5}}}$ $= \frac{1}{(x^{18}y^9)^{\frac{1}{9}} \cdot (x^{10}y^5)^{\frac{1}{5}}} = \frac{1}{x^2y \cdot x^2y} = \frac{1}{x^4y^2}$

9. Simplify the expression and rationalize the denominator.

$$\sqrt{\frac{2x}{11y^3}} = \frac{\sqrt{2x}}{\sqrt{11y^3}} \cdot \frac{\sqrt{11y}}{\sqrt{11y}} = \frac{\sqrt{22xy}}{11y^2}$$

10. Rewrite the expression.

$(c^m + 1)^{\frac{1}{m}}$

$$\sqrt[m]{c^m + 1}$$

11. Express as a polynomial.

$(10x^3 + \cancel{8x^2} - 2x + 3) + (7x^3 - \cancel{8x^2} - 4x)$

$$17x^3 - 6x + 3$$

12. Express as a polynomial.

$(3x+13)(4x^2 + 7x - 4)$

$$12x^3 + 21x^2 - 12x + 52x^2 + 91x - 52$$

$$12x^3 + 73x^2 + 79x - 52$$

13. Express as a polynomial.

$(x^2+14)(x^2-1)$

$$x^4 + 14x^2 - x^2 - 14$$

$$x^4 + 13x^2 - 14$$

14. $(4x+7y)^3$

$$(4x+7y)(4x+7y)(4x+7y)$$

$$(16x^2 + 56xy + 49y^2)(4x+7y)$$

$$64x^3 + 224x^2y + 196xy^2 + 112x^2y + 392xy^2 + 343y^3$$

$$64x^3 + 336x^2y + 588xy^2 + 343y^3$$

15. Simplify the expression.

$$\frac{2x^2+23x+56}{2x^2-11x-63} \qquad \frac{\cancel{(2x+7)}(x+8)}{\cancel{(2x+7)}(x-9)} = \frac{x+8}{x-9}$$

16. Simplify the expression.

$$\frac{2a^2+15a+25}{a^4-625} \div \frac{4a^2+20a+25}{a^2-5a} = \frac{\cancel{(2a+5)}\cancel{(a+5)}}{\cancel{(a^2-25)}(a^2+25)\cancel{(a-5)}\cancel{(a+5)}} \cdot \frac{a\cancel{(a-5)}}{\cancel{(2a+5)}(2a+5)}$$

$$= \frac{a}{(a^2+25)(2a+5)}$$

17. Simplify the expression.

$$\frac{25x}{7x-25} + \frac{125}{\cancel{7x^2-25x}} + \frac{5}{x} = \frac{25x(x)}{x(7x-25)} + \frac{125}{x(7x-25)} + \frac{5(7x-25)}{x(7x-25)}$$

$x(7x-25)$

$$= \frac{25x^2+125+35x-125}{x(7x-25)} = \frac{25x^2+35x}{x(7x-25)}$$

$$= \frac{5\cancel{x}(5x+7)}{\cancel{x}(7x-25)}$$

$$= \frac{5(5x+7)}{7x-25}$$