Practice Quiz for 8-30-17

[1] Graph each interval on a number line.

[a] $(2,5]$

[b] $(-\infty,2)$

[c] $[-1,1]$

[2] Evaluate each expression.

[a] $100^{\frac{3}{2}} = 10^3 = 1000$

[b] $9^{-2} = 81^{-1} = \frac{1}{81}$

[c] $\left(\frac{8}{27}\right)^{-\frac{1}{3}} = \left(\frac{2}{3}\right)^{-1} = \frac{3}{2}$

[3] Simplify each expression. Do not leave any negative exponents in your final answer.

[a] $\left(ab^2\right)^{-3}\left(a^{-1}b^3\right)^4$

$= a^{-3}b^{-6}a^{-4}b^{12}$

$= a^{-7}b^6 = \frac{b^6}{a^7}$

[b] $\frac{2x^2y}{9xy^{-3}} \cdot \frac{3x^{-4}}{8y^{-1}}$

$= \frac{x^{-2}y}{12xy^{-4}} = \frac{y^5}{12x^3}$

[4] Perform the operation and simplify your answers.

[a] $\frac{x^2+5x+6}{x^2-16} \cdot \frac{x^2-3x-4}{x^2+3x+2}$

$= \frac{(x+3)(x+2)}{(x-4)(x+4)} \cdot \frac{(x-4)(x+1)}{(x+2)(x+1)}$

$= \frac{x+3}{x+4}, \quad x \neq -1, -2, \pm 4$

[b] $\frac{x^2-9}{x^2+3x+2} \div \frac{x+3}{x+2}$

multiply by the reciprocal

$\frac{(x-3)(x+3)}{(x+2)(x+1)} \cdot \frac{x+2}{x+3}$

$= \frac{x-3}{x+1}, \quad x \neq -3, -2, -1$

[c] $1 - \frac{x}{x+2}$

$\frac{x+2}{x+2} - \frac{x}{x+2}$

$= \frac{x+2-x}{x+2}$

$= \frac{2}{x+2}$