Pre-Calculus

Sections P Quiz Review

Name: Key

Hour: _____

1. Simplify $\frac{\sqrt{150x^4}}{\sqrt{3x}}$

$\sqrt{\frac{150x^4}{3x}} = \sqrt{50x^3}$

$\sqrt{50}\ \sqrt{x^3}$

$\sqrt{25}\sqrt{2}\ \sqrt{x^2}\sqrt{x}$

$5\sqrt{2} \times \sqrt{x} = 5x\sqrt{2x}$

2. Simplify $\frac{6}{\sqrt{5}+\sqrt{3}} \cdot \frac{\sqrt{5}-\sqrt{3}}{\sqrt{5}-\sqrt{3}} = \frac{6\sqrt{5}-6\sqrt{3}}{5-3} = \frac{6\sqrt{5}-6\sqrt{3}}{2}$

$3\sqrt{5}-3\sqrt{3}$

3. Multiply $(x-y)(x^2+xy+y^2)$

$x^3 + \cancel{x^2y} + \cancel{xy^2}$

$\quad -\cancel{x^2y} - \cancel{xy^2} - y^3$

$x^3 \qquad -y^3$

$x^3 - y^3$

4. Factor $6x^3 - 18x^2 - 60x$

$6x(x^2-3x-10)$

$6x(x-5)(x+2)$

5. Factor $(x^3+6x^2)(-2x-12)$

$x^2(x+6)-2(x+6)$

$(x+6)(x^2-2)$

6. Factor $(x^2-10x+25)-36y^2$

$(x-5)(x-5)-36y^2$

$(x-5)^2-36y^2$

$(x-5)^2-(6y)^2$

a^2-b^2

$(a-b)(a+b)$

$[(x-5)-(6y)][(x-5)+(6y)]$

7. Subtract $\frac{3x}{x-3} - \frac{x+4}{x+2}\left(\frac{x-3}{x-3}\right)$ $\left(\frac{x+2}{x+2}\right)$

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

$$\frac{3x^2+6x}{(x+2)(x-3)} - \frac{x^2-3x+4x-12}{(x+2)(x-3)}$$

$$\frac{3x^2+6x}{(x+2)(x-3)} - 1\,\frac{x^2+x-12}{(x+2)(x-3)}$$

$$\frac{3x^2+6x-x^2-x+12}{(x+2)(x-3)}$$

$$\frac{2x^2+5x+12}{(x+2)(x-3)}$$

8. Divide $\frac{x^2-4}{x^2+3x-10} \div \frac{x^2+5x+6}{x^2+8x+15}$ $\leftarrow (x+3)(x+2)$ $\leftarrow (x+5)(x+3)$

$$\frac{\cancel{(x+2)}\cancel{(x-2)}}{\cancel{(x+5)}\cancel{(x-2)}} * \frac{\cancel{(x+5)}\cancel{(x+3)}}{\cancel{(x+3)}\cancel{(x+2)}}$$

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9. Simplify $\frac{\frac{x}{3}-1}{x-3}$

$$\frac{\frac{x}{3}-\frac{3}{3}}{x-3} = \frac{\frac{x-3}{3}}{\frac{x-3}{1}} = \frac{\cancel{x-3}}{3} \cdot \frac{1}{\cancel{x-3}} = \frac{1}{3}$$

10. The formula $T = 15{,}395 + 988x - 2x^2$ models the average cost of tuition and fees, at private U. S. Colleges for the school year ending x years after 2010. Use the formula to project the average cost of tuition and fees at a private U. S. college for the school year ending in 2016.

$T = 15395 + 988(6) - 2(6)^2$

$15395 + 5928 - 2(36)$

$21323 - 72$

\$21,251