Review Sheet Exam 1

Simplify Completely

1) $\left(\dfrac{7a^3b^{-5}}{3a^{-6}b^{-3}}\right)^{-3}$

2) $\left(\dfrac{8x^{-4}y^6}{5x^{-10}y^{-5}}\right)^2$

3) $\dfrac{\dfrac{2}{x}-\dfrac{3}{x-6}}{\dfrac{2}{x-6}-\dfrac{3}{x}}$

4) $\dfrac{\dfrac{9}{b^2}+\dfrac{1}{b}}{\dfrac{81}{b^2}-1}$

5) $8xy^2\sqrt{180x^{37}y^{12}z^{23}}$

6) $-5a^9bc^4\sqrt{117a^{16}b^{49}c^{81}}$

7) $\sqrt{\dfrac{27a^6}{100a^{10}}}$

8) $\sqrt{\dfrac{2x^3}{18x^{19}}}$

Solve the equation. For 11) and 12), check your answer.

9) $3x^2 - x - 10 = 0$

10) $2x^2 + 17x + 30 = 0$

11) $\dfrac{x}{x+5} - \dfrac{23}{x^2+5x} = -\dfrac{7}{x}$

12) $\dfrac{36}{x-9} - \dfrac{324}{x^2-9x} = -4$

Perform the indicated operation and express your answer in simplest form.

13) $\dfrac{x+3}{5x+20} * \dfrac{x^2-4}{x^2+5x+6}$

14) $\dfrac{4x-7}{3x+6} + \dfrac{3-x}{x+2}$

15) $\dfrac{x^2-5x-6}{5x+15} \div \dfrac{x^2-3x-4}{7x+21}$

16) $\dfrac{x+5}{x-6} - \dfrac{26x-24}{x^2-36}$

17) $\sqrt{8x}\left(\sqrt{5x^3} - 9\sqrt{20x^3}\right)$

18) $\sqrt{2}\left(3\sqrt{6} + 10\sqrt{24}\right)$

19) $\left(6 + \sqrt{3}\right)\left(6 - \sqrt{3}\right)$

20) $\left(3\sqrt{12} - 2\sqrt{3}\right)\left(\sqrt{2} + \sqrt{3}\right)$

Translate to radical notation, then evaluate.

21) $-262144^{\frac{5}{6}}$

22) $2187^{\frac{5}{7}}$