Pre-Calc Review

Exponents + Polynomial Operations

1. $\frac{3}{4} r^{-2} s^5 \cdot (-4r^3 s)^2$

2. $(5k^3 - k^2 + 7) + (-4k + k^2 + 2)$

3. $(3x+1)^2 (-x+4)^2$

4. $\dfrac{(-4m)^5}{10m^{-5}}$

Factoring Polynomials

1. GCF : $51a^8b^4 + 17a^3b^5$

2. Difference of □'s : $16x^4 - 1$

3. Sum of □'s : $8f^3 + 27$

4. Difference of □'s: $p^3 - 216q^3$

5. Trinomials: $16w^4 + 40w^2 + 25$

6. Factoring by grouping: $4c^3 + 20c^2 + 9c + 45$

Rational Expressions

1. Simplifying: $\dfrac{12n^2-48n}{288n^2-18n^4}$

2. x ÷ : $\dfrac{k^4-16}{2k^2-k-6} \div \dfrac{4k^3+16k}{12k^2+18k}$

3. x ÷ : $\dfrac{5p^2+29p-6}{5p^2-26p+5} \cdot \dfrac{3p^2-15p}{36-p^2}$

4. + - : $\dfrac{r+5}{r^2-25} + \dfrac{6}{r-5}$

5. + - : $\dfrac{3}{x+6} - \dfrac{2}{x-1}$

Radical and Rational Exponents

List: Perfect Squares: 1, 4, 9,
Perfect Cubes: 1, 8, 27,
Perfect Fourths: 1, 16, 81,

Simplify Radicals:

① $\sqrt{252}$

② $-5 \cdot \sqrt[3]{128}$

③ $\sqrt{121x^5y^6}$

Adding/Subtracting Radicals:

④ $2\sqrt{24} - 8\sqrt{12} + 7\sqrt{54}$

⑤ $4\sqrt{72x^5} - 3x\sqrt{242x^3}$

multiplying Radicals: (6) $5 \cdot \sqrt[3]{36} \cdot \sqrt[3]{-12}$

(7) $(5-\sqrt{2})(7\sqrt{2}+1)$

Dividing Radicals + Rationalizing Denominators: (8) $\frac{6\sqrt{480}}{2\sqrt{6}}$

(9) $\frac{6\sqrt{8}}{4\sqrt{3}}$ (10) $\frac{3+\sqrt{5}}{\sqrt{5}+4}$

Rational Exponents: Simplest Radical form

(11) $g^{3/4} \cdot g^{5/2}$

(12) $(w^{2/5})^{10/3}$

Write in Exponential form

(13) $\sqrt{(4y)^3}$

Complex Numbers

imaginary unit: i, where $i = \sqrt{-1}$

imaginary number: bi, where b is real part & i is the imaginary part.

Simplify: ① $\sqrt{-144}$ ② $\sqrt{-80}$

Powers of i:

$$i^1 = \sqrt{-1} = i$$
$$i^2 = (\sqrt{-1})^2 = -1$$
$$i^3 = i^2 \cdot i = -1 \cdot i = -i$$
$$i^4 = (i^2)^2 = (-1)^2 = 1$$

} cycle

Evaluate: ③ i^{11} ④ $(-\sqrt{-9})^3 \cdot (2i)^6$

complex number: $a + bi$, where a is the real number and bi is the imaginary #.

Simplify: ⑤ $(-3+5i) - (4+6i)$ ⑥ $(5+3i)(5-3i)$