Pre-Calculus 110

Name:_____

Show all work for each of the following in the space provided. **[48 MARKS]**

1. Expand and simplify the following radical expressions: [8]

(a) $\left(5\sqrt{3}\right)^2\left(2\sqrt{27}-7\sqrt{12}\right)$

(b) $\dfrac{3\sqrt{50}}{2\sqrt{48}}$

(c) $\left(3\sqrt{28}-\sqrt{18}\right)^2-\left(3\sqrt{32}-3\sqrt{27}\right)\left(4\sqrt{8}-\sqrt{75}\right)$ [6]

2. Solve the following radical equation:

$$\sqrt{4x+1}-\sqrt{3x-5}=2$$ [6]

3. Solve the equation $\frac{m}{m+4} - \frac{m}{m-1} = \frac{2-m}{m^2+3m-4}$. State all non-permissible values of m. [6]

4. Rationalize the denominator and simplify each of the following radical expressions: [8]

(a) $\frac{2w^6}{x^3} \sqrt[3]{\frac{4x^{10}}{5w^9}}$

(b) $\frac{3\sqrt{6}-2}{3\sqrt{8}-5}$

5. Simplify the following rational expressions: [8]

(a) $\frac{5a}{4a^5} - \frac{b}{3b^3} + \frac{2}{6a^2b^8}$

(b) $\frac{3x^2+x-2}{x^2+3x+2} \div \frac{9x^2-3x-2}{12x+4}$

6. Simplify the following rational expression. State all non-permissible values of the variable. [6]

$$\left(\frac{x+5}{x^2-6x-27} - \frac{x-5}{x^2-11x+18}\right) \times \frac{x^2-4}{10x+10} \div \frac{2x+4}{x^2-9}$$