

NAME: SOLUTIONS

QUIZ 3

Applied Mathematics for Electronics Engineering (201-943-DW)

Dawson College, Sept. 23rd 2011

Instructor: E. Richer

Question 1. (2 marks each)

Perform the following operations.

(a) $(x^2 + 1)(2x - 3x^2)$

$$= 2x^3 - 3x^4 + 2x - 3x^2$$

$$= \boxed{-3x^4 + 2x^3 - 3x^2 + 2x}$$

(b) $3\sqrt{A} - 4A^2B + 3(-\sqrt{A} - (4A^2B + 2\sqrt{A}))$

$$= 3\sqrt{A} - 4A^2B + 3(-\sqrt{A} - 4A^2B - 2\sqrt{A})$$

$$= 3\sqrt{A} - 4A^2B - 3\sqrt{A} - 12A^2B - 6\sqrt{A}$$

$$= \boxed{-6\sqrt{A} - 16A^2B}$$

(c) $\frac{4a^2b^3c - 2abc^2 + 12a^2b^3c^2}{2abc}$

$$= \frac{4a^2b^3c}{2abc} - \frac{2abc^2}{2abc} + \frac{12a^2b^3c^2}{2abc}$$

$$= \boxed{2ab^2c - c + 6ab^2c}$$

Question 2. (2 marks each)

Solve the following equations.

(a) $2x - 6 = -x + 9$

$$2x + x = 9 + 6$$

$$3x = 15$$

$$\boxed{x = 5}$$

(b) $\frac{x+1}{2} = \frac{3x}{5}$

$$10\left(\frac{x+1}{2}\right) = 10\left(\frac{3x}{5}\right)$$

$$5x + 5 = 6x$$

$$\boxed{5 = x}$$

Question 3. (3 marks)

Solve for x.

$$\frac{1}{x} + \frac{2}{5} = \frac{3}{5x} - 1 + \frac{2}{7x}$$

Multiply BOTH sides by 35x to get
RID OF FRACTIONS

$$35x \left(\frac{1}{x} + \frac{2}{5} \right) = 35x \left(\frac{3}{5x} - 1 + \frac{2}{7x} \right)$$

$$\frac{35x}{x} + \frac{70x}{5} = \frac{105x}{5x} - 35x + \frac{70x}{7x}$$

$$35 + 14x = 21 - 35x + 10$$

$$49x = -4$$

$$x = -\frac{4}{49}$$

Question 4. (3 marks)

Perform the following long division:

$$(x^4 - 3x^2 + 6x - 2) \div (x - 3)$$

$$\begin{array}{r} x^3 + 3x^2 + 6x + 24 \\ x-3 \overline{) x^4 - 3x^2 + 6x - 2} \\ \underline{-(x^4 - 3x^3)} \\ 3x^3 - 3x^2 + 6x - 2 \\ \underline{-(3x^3 - 9x^2)} \\ 6x^2 + 6x - 2 \\ \underline{-(6x^2 - 18x)} \\ 24x - 2 \\ \underline{-(24x - 72)} \\ 70 \end{array}$$

ANSWER $x^3 + 3x^2 + 6x + 24 + \frac{70}{x-3}$