

NAME: SOLUTIONS

QUIZ 3

Dawson College

Applied Math (201-943-DW S1)

Date: Oct 1s 2010

Instructor: E. Richer

Question 1. (10 marks)

Factor **completely** the following expressions.

(a) $x^2 - 7x + 12$

$$\left. \begin{array}{l} A \cdot B = 12 \\ A + B = -7 \end{array} \right\} -3 \text{ \& } -4$$
$$= \boxed{(x-3)(x-4)}$$

(b) $a^6(b-1)^4 - a^4(b-1)^2$

COMMON FACTOR $a^4(b-1)^2$

$$a^4(b-1)^2 (a^2(b-1)^2 - 1)$$

DIFFERENCE OF SQUARES

$$\boxed{a^4(b-1)^2 (a(b-1) + 1)(a(b-1) - 1)}$$

(c) $8x^2 + 2x - 3$

$$\left. \begin{array}{l} A \cdot B = -24 \\ A + B = 2 \end{array} \right\} 6 \text{ \& } -4$$
$$= 8x^2 - 4x + 6x - 3$$
$$= 4x(2x-1) + 3(2x-1)$$
$$= \boxed{(2x-1)(4x+3)}$$

(d) $x^4 - 16$

$$= (x^2 - 4)(x^2 + 4)$$

DIFFERENCE OF SQUARES
(TWICE)

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

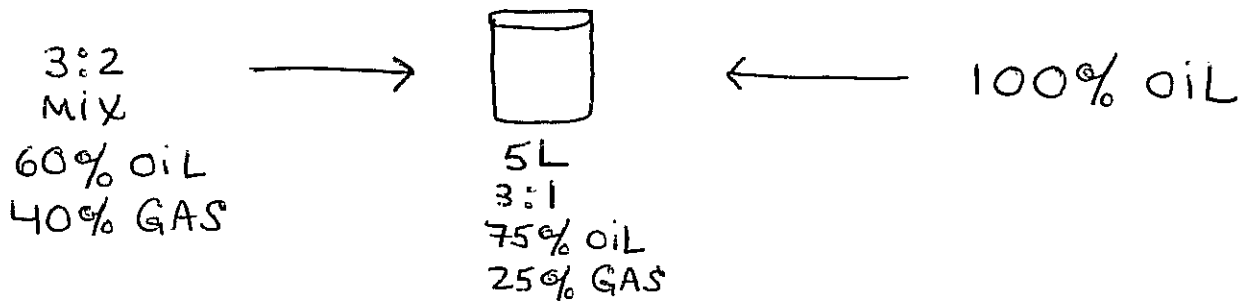
(e) $5x^3 + 80x^2 - 180x$

COMMON FACTOR $5x$

$$= 5x(x^2 + 16x - 36)$$
$$\left. \begin{array}{l} A \cdot B = -36 \\ A + B = 16 \end{array} \right\} 18 \text{ \& } -2$$
$$= \boxed{5x(x+18)(x-2)}$$

Question 2. (5 marks)

A mixture of 3:2 oil to gasoline is to be mixed with pure oil in order to obtain 5L of 3:1 oil to gasoline. How much pure oil is used in this process?



Let x : AMOUNT of 3:2 Mix
 y : AMOUNT of pure oil

$$x + y = 5 \longrightarrow y = 5 - x$$

$$0.6x + y = 0.75(5)$$

$$0.6x + 5 - x = 3.75$$

$$-0.4x = -1.25$$

$$x = \frac{-1.25}{-0.4} = 3.125 \quad \text{so } y = 5 - 3.125 = 1.875$$

1.875 L of pure oil

Question 3. (5 marks)

Isolate x in the following equation:

$$\frac{3}{2x} - 4y = \frac{7}{5} + 3y^2$$

Multiply both sides by $10x$

$$15 - 40xy = 14x + 30y^2x$$

$$15 = 14x + 30y^2x + 40xy$$

$$15 = x(14 + 30y^2 + 40y)$$

$$x = \frac{15}{14 + 30y^2 + 40y}$$