Section Assignment 2.3 Part 3
Common Factors

1. Factor the following: (9 marks)

a. $12m^2n - 15m$

$3m(4mn - 5)$

b. $22p^3 + 4$

$2(11p^3 + 2)$

c. $-5 - 30b^2 + 40b^3$

$-5(1 + 6b^2 - 8b^3)$

d. $x^2 + 5x - 14$ ← Trinomial

$(x + 7)(x - 2)$

+	×
+5	-14
	+7 · -2

e. $b^2 - 8b + 15$

$(b - 3)(b - 5)$

f. $h^2 + 11h + 30$

$(h + 6)(h + 5)$

g. $2y^2 + 10y - 72$

$2(y^2 + 5y - 36)$ →

Trinomial

+	×
5	-36
	9 · -4

$\boxed{2(y + 9)(y - 4)}$

h. $3c^2 + 9c - 54$

$3(c^2 + 3c - 18)$

Trinomial

+	×
3	-18
	6 · -3

$3(c+6)(c-3)$

i. $m^3n - 5m^2n - 24mn$

$mn(m^2 - 5m - 24)$

Trinomial

+	×
-5	-24
	-8 · 3

$mn(m-8)(m+3)$

2. The following factorizations contain errors. Identify the error, and then provide the correct solution. (4 marks; 2 marks each)

a. $32x^4 + 28x^2 - 8x = 8x(4x^3 + 7x - 1)$

Error:

8 is not a factor of 28

$4x(8x^3 + 7x - 2)$

Correct solution:

$4x(8x^3 + 7x - 2)$

b. $b^2c^2 - 3bc^2 - 40c^2 = c^2(b^2 + 3b - 40)$

$= c^2(b + 8)(b - 5)$

Error:

Should be $-3b$

Correct solution:

$c^2(b^2 - 3b - 40)$

$c^2(b-8)(b+5)$

Section Assignment 2.3 Part 4
Factoring Trinomials

1. Factor completely. (8 marks; 2 marks each)

a. $3x^2 - 5x - 12$

Now we don't have any common factors. We also have a number in front of x^2 term (3). Have to use DECOMPOSITION

$3x^2 - 5x - 12$

-36

+	×
-5	-36
	-9 , +4

$3x^2 - 5x - 12$

replace by

$3x^2 - 9x + 4x - 12$

$3x(x-3) \mid 4(x-3)$

whatever you get here you put

Here

$3x(x-3) + 4(x-3)$

factor out $(x-3)$

$\boxed{(x-3)(3x+4)}$

b. $2x^2 + 9x - 68$

c. $7x^2 + 42x + 35$

d. $25x^2 - 30x + 9$

b) $2x^2 + 9x - 68$

-136

+	×
9	-136
	~~2 · 68~~
	17 · -8 ✓

replace with

$$2x^2 \underbrace{+ 9x}_{} - 68$$

$$2x^2 + 17x + 8x - 68$$

$$x(2x + 17) - 4(2x + 17)$$

$$\boxed{(2x + 17)(x - 4)}$$

c) $7x^2 + 42x + 35$

245

+	×
42	245
	~~49 · 5~~
	35 · 7 ✓

$$7x^2 \underbrace{+ 42x}_{} + 35$$

$$7x^2 + 35x + 7x + 35$$

$$7x(x + 5) + 7(x + 5)$$

$$\boxed{(7x + 7)(x + 5)}$$

d) $25x^2 - 30x + 9$

225

+	×
-30	225
	$-15 \cdot -15$

$$25x^2 \underbrace{- 30x}_{} + 9$$

$$25x^2 - 15x \mid -15x + 9$$

$$5x(5x-3) \mid -3(5x-3)$$

$$\boxed{(5x-3)(5x-3)}$$

2. Which of the following trinomials can be factored? If the trinomial can be factored, state the factors. If it cannot, explain why not. (14 marks)

a. $x^2 + 2x - 35$ YES)

$(x+7)(x-5)$

b. $x^2 - 6x - 27$ YES

$(x-9)(x+3)$

c. $x^2 - 3x - 5$ NO

d. $2x^2 + 3x - 2$

-4

+	×
+3	-4
	4 · -1

YES

$2x^2 + 4x - x - 2$

$2x(x+2) \mid -1(x+2)$

$\boxed{(x+2)(2x-1)}$