Name: _____ (SYDNEY GIRLS H.S.) [9M3 – 2009]

Year 9 – Factorising Algebraic Expressions TEST

- Time allowed: 35 minutes.
- Write all answers on the question paper.
- Show all necessary working.

Question 1.
Factorise the following: (18 marks)

(a) $8x^2+2x$

(b) $4y^3+18y^2-2y$

(c) $(xy-2x)+(8y-16)$

(d) $81-x^2$

(e) $6y^2-54$

(f) $x^2-5x-14$

(g) $3x^2-10x-8$

(h) $8p^2-14pq+3q^2$

(i) $(x+2)^2-9$

(j) $8x^3-27$

Question 2.
Simplify the following: (7 marks)

(a) $\dfrac{9y+18}{3}$

(b) $\dfrac{5b-15}{b-3}$ =

(c) $\dfrac{(x-y)^2}{2} \times \dfrac{1}{x^2-y^2}$

(d) $\dfrac{x^2-x-20}{x^2-25} \div \dfrac{x+1}{x^2+5x}$

Question 3.
Simplify the following:

(9 marks)

(a) $\frac{5}{4x}-\frac{1}{x}=$

(b) $\frac{2}{x^2-3x+2}+\frac{4}{x^2+2x-3}=$

(c) $\frac{3y}{y-3}-\frac{y-3}{y+3}=$

End of Test ☺

Name _____ [9M3 – 2009]

Year 9 –Factorising Algebraic Expressions TEST

325/34 96%

- Time allowed: 35 minutes.
- Write all answers on the question paper.
- Show all necessary working.

(16½)

Question 1.
Factorise the following: (18 marks)

(a) $8x^2+2x$
$= 2x(4x+1)$ ✓(1)

(b) $4y^3+18y^2-2y$
$= 2y(2y^2+9y-1)$ ✓(1)

(c) $xy-2x+8y-16$
$= x(y-2)+8(y-2)$
$= (y-2)(x+8)$ ✓(2)

(d) $81-x^2$
$= (9-x)(9+x)$ ✓(1)

(e) $6y^2-54$
$= 6(y^2-9)$
$= 6(y-3)(y+3)$ ✓(2)

(f) $x^2-5x-14$
$= (x+7)(x-2)$ (½)
(−, +)

(g) $3x^2-10x-8$

P = −24
S = −10
F = −12, 2.

$= 3x^2-12x+2x-8$
$= 3x(x-4)+2(x-4)$
$= (x-4)(3x+2)$ ✓(3)

(h) $8p^2-14pq+3q^2$

P = 24
S = −14
F = −12, −2.

$= 8p^2-2pq-12pq+3q^2$
$= 2p(4p-q)-3q(4p-q)$
$= (4p-q)(2p-3q)$ ✓(3)

(i) $(x+2)^2-9$
$= (x+2)(x+2)-9$
$= x^2+4x+4-9$
$= x^2+4x-5$
$= (x+5)(x-1)$ ✓(2)

(j) $8x^3-27$
$= (2x)^3-(3)^3$ (1)

Question 2.
Simplify the following: (7) (7 marks)

(a) $\frac{9y+18}{3} = \frac{3(y+2)}{3}$
$= 3(y+2)$ ✓(1)

(b) $\frac{5b-15}{b-3} = \frac{5(b-3)}{(b-3)}$
$= 5$ ✓(1)

(c) $\frac{(x-y)^2}{2} \times \frac{1}{x^2-y^2} = \frac{(x-y)^2}{2} \times \frac{1}{(x-y)(x+y)}$
$= \frac{x-y}{2} \times \frac{1}{x+y}$
$= \frac{(x-y)}{2(x+y)}$ ✓(2)

(d) $\frac{x^2-x-20}{x^2-25} \div \frac{x+1}{x^2+5x} = \frac{(x-5)(x+4)}{(x-5)(x+5)} \times \frac{x(x+5)}{x+1}$
$= \frac{x(x+4)}{(x+1)}$ ✓(3)

Question 3. (9 marks)

Simplify the following:

(a) $\frac{5}{4x}-\frac{1}{x}=\frac{5}{4x}-\frac{4}{4x}$

$=\frac{1}{4x}$ ✓ (2)

(b) $\frac{2}{x^2-3x+2}+\frac{4}{x^2+2x-3}=\frac{2}{(x-1)(x-2)}+\frac{4}{(x+3)(x-1)}$

$=\frac{2(x+3)+4(x-2)}{(x-1)(x-2)(x+3)}$

$=\frac{2x+6+4x-8}{(x-1)(x-2)(x+3)}$

$=\frac{6x-2}{(x-1)(x-2)(x+3)}$

$=\frac{2(3x-1)}{(x-1)(x-2)(x+3)}$ ✓ (3)

(c) $\frac{3y}{y-3}-\frac{y-3}{y+3}=\frac{3y(y+3)-(y-3)(y-3)}{(y-3)(y+3)}$

$=\frac{3y^2+9y-y^2+6y-9}{(y-3)(y+3)}$

$=\frac{2y^2+15y-9}{(y-3)(y+3)}$ ✓ (4)

End of Test ☺