93%

period 1

MHF-4U **QUIZ#2** (Application)

[redacted]

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1. Factor completely.

a) $120x^3y^3 - 72x^4y^5 + 24x^2y^3$

(2) $= 24x^2y^3(5x - 3x^2y^2 + 1)$

2

b) $10x(3y + 2) - 2(3y + 2)$

(3) $= (10x - 2)(3y + 2)$

$= 2(5x - 1)(3y + 2)$

3

c) $49x^2 - (5x - 4)^2$

(3) $= (7x - (5x - 4))(7x + (5x - 4))$

$= (7x + 5x - 4)(7x - 5x + 4)$

$= (12x - 4)(2x + 4)$

$= 4(3x - 1)(x + 2)$

d) $12x^2 - 13xy - 35y^2$

$= 12x^2 - 28xy + 15xy - 35y^2$

(2) $= 4x(3x - 7y) + 5y(3x - 7y)$

$= (4x + 5y)(3x - 7y)$

2

e) $42xy - 77y - 24x + 44$

$= 42xy - 24x - 77y + 44$

(2) $= 6x(7y - 4) - 11(7y - 4)$

$= (6x - 11)(7y - 4)$

2

f) $4x^2 - 12x + 9 - 25y^2$

$= 4x^2 - 6x - 6x + 9 - 25y^2$

(3) $= 2x(2x - 3) - 3(2x - 3) - 25y^2$

$= (2x - 3)^2 - 25y^2$

$= ((2x - 3) - 5y)((2x - 3) + 5y)$

$= (2x - 3 - 5y)(2x - 3 + 5y)$

3

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2. Describe the transformations, in words, that would be applied to $y = 2^x$ to give $y = \left(\frac{1}{5}\right)2^{-3(x+5)} + 7$.

(5)

Vertical compression by a factor of $\frac{1}{5}$, horizontal reflection (reflection in y-axis), horizontal compression by a factor of $\frac{1}{3}$, horizontal shift five units left, vertical shift 7 units up

5

3. If the parent function, $y = |x|$, was transformed in the following ways, write the **final** equation with **all** the transformations included.

(5)

i) reflection in the x-axis

ii) down 8

iii) horizontal stretch by a factor of 4

iv) vertical stretch by a factor of 5

v) right 3

$y = -5\left|\frac{1}{4}(x-3)\right| - 8$

5

4. If $(4, -5)$ is on the original function, $y = f(x)$, find the corresponding point (X, Y) for $y = -3f(2x - 12) - 5$. Show work.

(5)

$(4, -5) \rightarrow y = -3f(2(x-6)) - 5$

$x = \frac{1}{2}x + 6$

$y = -3y - 5$

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

$= 8$

$y = -3(-5) - 5$

$= 10$

$\therefore$ the new point is $(8, 10)$

5

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