

MHF4U: Factoring Review

1. Factor fully.

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|-----------------------|----------------------|-----------------------|
| (a) $p^2 + 2pr + r^2$ | (b) $16n^2 + 8n + 1$ | (c) $9u^2 + 30u + 25$ |
| (d) $v^2 + 4v + 3$ | (e) $2w^2 + 3w + 1$ | (f) $3k^2 + 7k + 2$ |
| (g) $7y^2 + 15y + 2$ | (h) $5x^2 - 16x + 3$ | (i) $3v^2 - 11v - 10$ |

2. Factor fully.

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|---------------------|-------------------------|-----------------|
| (a) $25x^2 - y^2$ | (b) $m^2 - p^2$ | (c) $1 - 16r^2$ |
| (d) $49m^2 - 64$ | (e) $p^2r^2 - 100x^2$ | (f) $3 - 48y^2$ |
| (g) $(x + n)^2 - 9$ | (h) $49u^2 - (x - y)^2$ | (i) $x^4 - 16$ |

3. Factor fully.

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|-------------------------|----------------------------|-----------------------------|
| (a) $kx + px - ky - py$ | (b) $fx - gy + gx - fy$ | (c) $h^3 + h^2 + h + 1$ |
| (d) $x - d + (x - d)^2$ | (e) $4y^2 + 4yz + z^2 - 1$ | (f) $x^2 - y^2 + z^2 - 2xz$ |

4. Factor fully.

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|-------------------------|---------------------------|--------------------------|
| (a) $4x^2 + 2x - 6$ | (b) $28s^2 + 8st - 20t^2$ | (c) $y^2 - (r - n)^2$ |
| (d) $8 + 24m - 80m^2$ | (e) $6x^2 - 13x + 6$ | (f) $y^3 + y^2 - 5y - 5$ |
| (g) $60y^2 - 10y - 120$ | (h) $10x^2 + 38x + 20$ | (i) $27x^2 - 48$ |

5. Factor fully.

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|--|--|
| (a) $36(2x - y)^2 - 25(x - 2y)^2$ | (b) $g(1 - x) - gx + gx^2$ |
| (c) $y^5 - y^4 + y^3 - y^2 + y - 1$ | (d) $n^4 + 2n^2w^2 + w^4$ |
| (e) $9(x + 2y + z)^2 - 16(x - 2y + z)^2$ | (f) $8u^2(u + 1) + 2u(u + 1) - 3(u + 1)$ |
| (g) $p^2 - 2p + 1 - y^2 - 2yz - z^2$ | (h) $9y^4 + 12y^2 + 4$ |
| (i) $abx^2 + (an + bm)x + mn$ | (j) $x^2 + 2 + \frac{1}{x^2}$ |

Solutions

1. Factor fully.

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|-----------------------|-----------------------|--------------------------------|
| (a) $(p + r)^2$ | (b) $(4n + 1)^2$ | (e) $(2y + z + 1)(2y + z - 1)$ |
| (c) $(3u + 5)^2$ | (d) $(v + 3)(v + 1)$ | (f) $(x - z + y)(x - z - y)$ |
| (e) $(2w + 1)(w + 1)$ | (f) $(3k + 1)(k + 2)$ | |
| (g) $(7y + 1)(y + 2)$ | (h) $(5x - 1)(x - 3)$ | |
| (i) DNF | | |

2. Factor fully.

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|--------------------------------|-------------------------|
| (a) $(5x + y)(5x - y)$ | (b) $(m + p)(m - p)$ |
| (c) $(1 + 4r)(1 - 4r)$ | (d) $(7m + 8)(7m - 8)$ |
| (e) $(pr + 10x)(pr - 10x)$ | (f) $3(1 + 4y)(1 - 4y)$ |
| (g) $(x + n + 3)(x + n - 3)$ | |
| (h) $(7u + x - y)(7u - x + y)$ | |
| (i) $(x^2 + 4)(x + 2)(x - 2)$ | |

3. Factor fully.

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|------------------------|--------------------------|
| (a) $(k + p)(x - y)$ | (b) $(x - y)(f + g)$ |
| (c) $(h + 1)(h^2 + 1)$ | (d) $(x - d)(1 + x - d)$ |

4. Factor fully.

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|------------------------------|--------------------------|
| (a) $2(2x + 3)(x - 1)$ | (b) $4(7s - 5t)(s + t)$ |
| (c) $(y + r - n)(y - r + n)$ | (d) $8(1 - 2m)(1 + 5m)$ |
| (e) $(3x - 2)(2x - 3y)$ | (f) $(y + 1)(y^2 - 5)$ |
| (g) $10(3y + 4)(2y - 3)$ | (h) $2(5x^2 + 19x + 10)$ |
| (i) $3(3x + 4)(3x - 4)$ | |

5. Factor fully.

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|--------------------------------------|------------------------------------|
| (a) $(17x - 16y)(7x + 4y)$ | |
| (b) $g(1 - x)^2$ | (c) $(y - 1)(y^4 + y^2 + 1)$ |
| (d) $(n^2 + w^2)^2$ | (e) $-(x - 14y + z)(7x - 2y + 7z)$ |
| (f) $(u + 1)(4u + 3)(2u - 1)$ | |
| (g) $(p - 1 + y + z)(p - 1 - y - z)$ | |
| (h) $(3y^2 + 2)^2$ | (i) $(ax + m)(bx + n)$ |
| (j) $(x + \frac{1}{x})^2$ | |