Multiplying a Binomial by Two Trinomials (A)

Simplify each expression.

1. $(-5g - 6)(5g^4 - 4g^3 + 5g^2)(5g^3 + 8g^2 - 9g)$

2. $(-2x^4 - 6x^3)(6x^3 - 2x^2 + x)(7x^3 + x^2 + 6x)$

3. $(4n + 3)(-8n^5 - 3n^4 - 6n^3)(-9n^3 - 7n^2 - n)$

4. $(h^4 - 7h^3)(6h^3 + 5h^2 - 5h)(6h^2 - 6h - 3)$

5. $(2r + 7)(r^2 - 9r - 5)(-7r^5 + 9r^4 + 5r^3)$

Multiplying a Binomial by Two Trinomials (A) Answers

Simplify each expression.

1. $(-5g-6)(5g^4-4g^3+5g^2)(5g^3+8g^2-9g)$
$= -125g^8-250g^7+140g^6-68g^5-231g^4+270g^3$

2. $(-2x^4-6x^3)(6x^3-2x^2+x)(7x^3+x^2+6x)$
$= -84x^{10}-236x^9-34x^8-224x^7+54x^6-36x^5$

3. $(4n+3)(-8n^5-3n^4-6n^3)(-9n^3-7n^2-n)$
$= 288n^9+548n^8+581n^7+429n^6+159n^5+18n^4$

4. $(h^4-7h^3)(6h^3+5h^2-5h)(6h^2-6h-3)$
$= 36h^9-258h^8-36h^7+561h^6-90h^5-105h^4$

5. $(2r+7)(r^2-9r-5)(-7r^5+9r^4+5r^3)$
$= -14r^8+95r^7+422r^6-467r^5-680r^4-175r^3$

Multiplying a Binomial by Two Trinomials (B)

Simplify each expression.

1. $(-2p^2 - 7p)(4p^5 - p^4 - 5p^3)(-5p^4 - 2p^3 - 5p^2)$

2. $(2m^2 + 2m)(-9m^4 - 4m^3 + 8m^2)(-8m^3 + 2m^2 + m)$

3. $(2t + 6)(-5t^3 - t^2 - 7t)(-t^4 - 5t^3 - 8t^2)$

4. $(4z^5 - 8z^4)(-3z^2 + 6z + 4)(-5z^4 + 3z^3 - 3z^2)$

5. $(-c^4 - 9c^3)(5c^2 + 6c - 5)(-6c^4 + 7c^3 + 2c^2)$

Multiplying a Binomial by Two Trinomials (B) Answers

Simplify each expression.

1. $(-2p^2 - 7p)(4p^5 - p^4 - 5p^3)(-5p^4 - 2p^3 - 5p^2)$
$= 40p^{11} + 146p^{10} + 7p^9 - 79p^8 - 155p^7 - 175p^6$

2. $(2m^2 + 2m)(-9m^4 - 4m^3 + 8m^2)(-8m^3 + 2m^2 + m)$
$= 144m^9 + 172m^8 - 134m^7 - 138m^6 + 40m^5 + 16m^4$

3. $(2t + 6)(-5t^3 - t^2 - 7t)(-t^4 - 5t^3 - 8t^2)$
$= 10t^8 + 82t^7 + 260t^6 + 398t^5 + 370t^4 + 336t^3$

4. $(4z^5 - 8z^4)(-3z^2 + 6z + 4)(-5z^4 + 3z^3 - 3z^2)$
$= 60z^{11} - 276z^{10} + 340z^9 - 80z^8 + 96z^6$

5. $(-c^4 - 9c^3)(5c^2 + 6c - 5)(-6c^4 + 7c^3 + 2c^2)$
$= 30c^{10} + 271c^9 - 73c^8 - 715c^7 + 217c^6 + 90c^5$

Multiplying a Binomial by Two Trinomials (C)

Simplify each expression.

1. $(-8n - 1)(5n^4 + 7n^3 + 5n^2)(-4n^4 - 2n^3 + 2n^2)$

2. $(5n^2 + 7n)(5n^2 - 6n - 4)(7n^3 + 7n^2 + 7n)$

3. $(-3f^4 - 7f^3)(2f^3 + 6f^2 + 4f)(-8f^2 + f - 5)$

4. $(a + 8)(-9a^5 + 4a^4 - 6a^3)(9a^2 - 9a - 7)$

5. $(8d^2 + 4d)(2d^3 - 3d^2 + d)(-9d^5 - 9d^4 - 7d^3)$

Multiplying a Binomial by Two Trinomials (C) Answers

Simplify each expression.

1. $(-8n-1)(5n^4+7n^3+5n^2)(-4n^4-2n^3+2n^2)$
$= 160n^9+324n^8+230n^7-8n^6-84n^5-10n^4$

2. $(5n^2+7n)(5n^2-6n-4)(7n^3+7n^2+7n)$
$= 175n^7+210n^6-224n^5-595n^4-630n^3-196n^2$

3. $(-3f^4-7f^3)(2f^3+6f^2+4f)(-8f^2+f-5)$
$= 48f^9+250f^8+430f^7+330f^6+242f^5+140f^4$

4. $(a+8)(-9a^5+4a^4-6a^3)(9a^2-9a-7)$
$= -81a^8-531a^7+909a^6-190a^5+250a^4+336a^3$

5. $(8d^2+4d)(2d^3-3d^2+d)(-9d^5-9d^4-7d^3)$
$= -144d^{10}+68d^8+112d^7-8d^6-28d^5$

Multiplying a Binomial by Two Trinomials (D)

Simplify each expression.

1. $(7y^4 + 3y^3)(-2y^2 - y - 6)(-7y^3 - 3y^2 + 7y)$

2. $(8x^5 + 8x^4)(-5x^4 + 6x^3 + 3x^2)(-4x^5 + 7x^4 + 3x^3)$

3. $(-4m^3 - 4m^2)(m^5 - 4m^4 + 4m^3)(9m^5 + 4m^4 - 7m^3)$

4. $(3a - 1)(-5a^3 + 2a^2 - 2a)(-4a^3 - 7a^2 + 6a)$

5. $(7z^3 - 9z^2)(4z^4 + 9z^3 - 4z^2)(z^5 + z^4 + 4z^3)$

Multiplying a Binomial by Two Trinomials (D) Answers

Simplify each expression.

1. $(7y^4 + 3y^3)(-2y^2 - y - 6)(-7y^3 - 3y^2 + 7y)$
$= 98y^9 + 133y^8 + 256y^7 + 170y^6 - 261y^5 - 126y^4$

2. $(8x^5 + 8x^4)(-5x^4 + 6x^3 + 3x^2)(-4x^5 + 7x^4 + 3x^3)$
$= 160x^{14} - 312x^{13} - 352x^{12} + 432x^{11} + 384x^{10} + 72x^9$

3. $(-4m^3 - 4m^2)(m^5 - 4m^4 + 4m^3)(9m^5 + 4m^4 - 7m^3)$
$= -36m^{13} + 92m^{12} + 76m^{11} - 228m^{10} - 64m^9 + 112m^8$

4. $(3a - 1)(-5a^3 + 2a^2 - 2a)(-4a^3 - 7a^2 + 6a)$
$= 60a^7 + 61a^6 - 135a^5 + 114a^4 - 62a^3 + 12a^2$

5. $(7z^3 - 9z^2)(4z^4 + 9z^3 - 4z^2)(z^5 + z^4 + 4z^3)$
$= 28z^{12} + 55z^{11} + 30z^{10} + 35z^9 - 400z^8 + 144z^7$

Multiplying a Binomial by Two Trinomials (E)

Simplify each expression.

1. $(4t^3 + 4t^2)(6t^2 - 2t - 9)(9t^2 + 6t + 3)$

2. $(-7y^3 - 8y^2)(-2y^3 - 5y^2 - 6y)(6y^4 - y^3 + 5y^2)$

3. $(-7a^3 - 9a^2)(7a^2 + a + 4)(-7a^3 - 2a^2 + 7a)$

4. $(9d^2 + 9d)(-5d^3 - 5d^2 - 7d)(6d^3 - 4d^2 - 2d)$

5. $(2t^5 - 3t^4)(-t^4 - 8t^3 + 8t^2)(-4t^5 + t^4 + 6t^3)$

Multiplying a Binomial by Two Trinomials (E) Answers

Simplify each expression.

1. $(4t^3 + 4t^2)(6t^2 - 2t - 9)(9t^2 + 6t + 3)$
$= 216t^7 + 288t^6 - 228t^5 - 540t^4 - 348t^3 - 108t^2$

2. $(-7y^3 - 8y^2)(-2y^3 - 5y^2 - 6y)(6y^4 - y^3 + 5y^2)$
$= 84y^{10} + 292y^9 + 511y^8 + 461y^7 + 362y^6 + 240y^5$

3. $(-7a^3 - 9a^2)(7a^2 + a + 4)(-7a^3 - 2a^2 + 7a)$
$= 343a^8 + 588a^7 + 56a^6 - 164a^5 - 187a^4 - 252a^3$

4. $(9d^2 + 9d)(-5d^3 - 5d^2 - 7d)(6d^3 - 4d^2 - 2d)$
$= -270d^8 - 360d^7 - 198d^6 + 234d^5 + 468d^4 + 126d^3$

5. $(2t^5 - 3t^4)(-t^4 - 8t^3 + 8t^2)(-4t^5 + t^4 + 6t^3)$
$= 8t^{14} + 50t^{13} - 185t^{12} + 58t^{11} + 216t^{10} - 144t^9$

Multiplying a Binomial by Two Trinomials (F)

Simplify each expression.

1. $(9p^5 - p^4)(-2p^2 + p + 6)(-5p^5 + 4p^4 + 6p^3)$

2. $(-8p^5 - 3p^4)(9p^3 + 2p^2 - 7p)(-p^4 - 5p^3 - 4p^2)$

3. $(-w - 2)(-6w^4 - 9w^3 + 4w^2)(4w^4 - 5w^3 + 5w^2)$

4. $(5r^3 + 5r^2)(9r^5 + 4r^4 - 8r^3)(2r^2 + 5r + 1)$

5. $(4p^4 + 4p^3)(8p^2 - 7p + 7)(2p^5 - 8p^4 + 4p^3)$

Multiplying a Binomial by Two Trinomials (F) Answers

Simplify each expression.

1. $(9p^5 - p^4)(-2p^2 + p + 6)(-5p^5 + 4p^4 + 6p^3)$
$= 90p^{12} - 127p^{11} - 329p^{10} + 308p^9 + 294p^8 - 36p^7$

2. $(-8p^5 - 3p^4)(9p^3 + 2p^2 - 7p)(-p^4 - 5p^3 - 4p^2)$
$= 72p^{12} + 403p^{11} + 453p^{10} - 99p^9 - 305p^8 - 84p^7$

3. $(-w - 2)(-6w^4 - 9w^3 + 4w^2)(4w^4 - 5w^3 + 5w^2)$
$= 24w^9 + 54w^8 - 19w^7 + 3w^6 + 110w^5 - 40w^4$

4. $(5r^3 + 5r^2)(9r^5 + 4r^4 - 8r^3)(2r^2 + 5r + 1)$
$= 90r^{10} + 355r^9 + 330r^8 - 115r^7 - 220r^6 - 40r^5$

5. $(4p^4 + 4p^3)(8p^2 - 7p + 7)(2p^5 - 8p^4 + 4p^3)$
$= 64p^{11} - 248p^{10} + 96p^9 + 72p^8 - 224p^7 + 112p^6$

Multiplying a Binomial by Two Trinomials (G)

Simplify each expression.

1. $(-7n^4 - 6n^3)(6n^3 - n^2 + 8n)(-9n^3 - 4n^2 - 6n)$

2. $(9k + 5)(8k^2 - 8k + 9)(-5k^4 + 7k^3 - 9k^2)$

3. $(3r^2 - 8r)(-7r^3 + 2r^2 - 3r)(-8r^5 + 2r^4 + 7r^3)$

4. $(k^2 - 3k)(2k^5 + 7k^4 + 5k^3)(2k^5 - 8k^4 + 3k^3)$

5. $(-4w^5 + 7w^4)(-w^3 - 6w^2 - 9w)(-2w^5 + 4w^4 - 6w^3)$

Multiplying a Binomial by Two Trinomials (G) Answers

Simplify each expression.

1. $(-7n^4 - 6n^3)(6n^3 - n^2 + 8n)(-9n^3 - 4n^2 - 6n)$
$= 378n^{10} + 429n^9 + 818n^8 + 806n^7 + 492n^6 + 288n^5$

2. $(9k + 5)(8k^2 - 8k + 9)(-5k^4 + 7k^3 - 9k^2)$
$= -360k^7 + 664k^6 - 1077k^5 + 350k^4 - 54k^3 - 405k^2$

3. $(3r^2 - 8r)(-7r^3 + 2r^2 - 3r)(-8r^5 + 2r^4 + 7r^3)$
$= 168r^{10} - 538r^9 + 177r^8 + 192r^7 - 127r^6 + 168r^5$

4. $(k^2 - 3k)(2k^5 + 7k^4 + 5k^3)(2k^5 - 8k^4 + 3k^3)$
$= 4k^{12} - 14k^{11} - 34k^{10} + 101k^9 + 72k^8 - 45k^7$

5. $(-4w^5 + 7w^4)(-w^3 - 6w^2 - 9w)(-2w^5 + 4w^4 - 6w^3)$
$= -8w^{13} - 18w^{12} + 56w^{11} - 216w^9 + 378w^8$

Multiplying a Binomial by Two Trinomials (H)

Simplify each expression.

1. $(-9t^4 + 5t^3)(2t^3 - 2t^2 - 2t)(7t^5 + 2t^4 - 7t^3)$

2. $(4p - 6)(-9p^4 - p^3 - 5p^2)(-6p^5 + 8p^4 - 3p^3)$

3. $(9f^2 - 8f)(-8f^4 - 4f^3 - 4f^2)(-9f^3 + 9f^2 + f)$

4. $(-2r^4 + 2r^3)(8r^5 + 8r^4 + 7r^3)(9r^3 + 8r^2 - 6r)$

5. $(2f - 2)(-8f^4 - 6f^3 + 5f^2)(-4f^4 + 3f^3 + 5f^2)$

Multiplying a Binomial by Two Trinomials (H) Answers

Simplify each expression.

1. $(-9t^4 + 5t^3)(2t^3 - 2t^2 - 2t)(7t^5 + 2t^4 - 7t^3)$
$= -126t^{12} + 160t^{11} + 238t^{10} - 250t^9 - 76t^8 + 70t^7$

2. $(4p - 6)(-9p^4 - p^3 - 5p^2)(-6p^5 + 8p^4 - 3p^3)$
$= 216p^{10} - 588p^9 + 592p^8 - 442p^7 + 282p^6 - 90p^5$

3. $(9f^2 - 8f)(-8f^4 - 4f^3 - 4f^2)(-9f^3 + 9f^2 + f)$
$= 648f^9 - 900f^8 + 216f^7 - 296f^6 + 284f^5 + 32f^4$

4. $(-2r^4 + 2r^3)(8r^5 + 8r^4 + 7r^3)(9r^3 + 8r^2 - 6r)$
$= -144r^{12} - 128r^{11} + 114r^{10} + 142r^9 + 100r^8 - 84r^7$

5. $(2f - 2)(-8f^4 - 6f^3 + 5f^2)(-4f^4 + 3f^3 + 5f^2)$
$= 64f^9 - 64f^8 - 156f^7 + 126f^6 + 80f^5 - 50f^4$

Multiplying a Binomial by Two Trinomials (I)

Simplify each expression.

1. $(y^4 + y^3)(-9y^4 + 8y^3 - y^2)(3y^2 - 2y + 4)$

2. $(8f^2 + 4f)(f^2 + 7f + 6)(-4f^3 - 9f^2 - 6f)$

3. $(2z - 6)(2z^5 - 4z^4 + 8z^3)(-2z^3 + 5z^2 - 8z)$

4. $(-v + 3)(7v^2 + 4v + 4)(5v^2 - 6v + 9)$

5. $(-5q^4 + 2q^3)(4q^4 + 3q^3 + 2q^2)(9q^2 - 2q - 3)$

Multiplying a Binomial by Two Trinomials (I) Answers

Simplify each expression.

1. $(y^4 + y^3)(-9y^4 + 8y^3 - y^2)(3y^2 - 2y + 4)$
$= -27y^{10} + 15y^9 - 13y^8 - 21y^7 + 30y^6 - 4y^5$

2. $(8f^2 + 4f)(f^2 + 7f + 6)(-4f^3 - 9f^2 - 6f)$
$= -32f^7 - 312f^6 - 892f^5 - 1140f^4 - 672f^3 - 144f^2$

3. $(2z - 6)(2z^5 - 4z^4 + 8z^3)(-2z^3 + 5z^2 - 8z)$
$= -8z^9 + 60z^8 - 212z^7 + 456z^6 - 560z^5 + 384z^4$

4. $(-v + 3)(7v^2 + 4v + 4)(5v^2 - 6v + 9)$
$= -35v^5 + 127v^4 - 125v^3 + 165v^2 + 108$

5. $(-5q^4 + 2q^3)(4q^4 + 3q^3 + 2q^2)(9q^2 - 2q - 3)$
$= -180q^{10} - 23q^9 + 38q^8 + 65q^7 + 4q^6 - 12q^5$

Multiplying a Binomial by Two Trinomials (J)

Simplify each expression.

1. $(-3b - 5)(b^2 + 7b - 2)(2b^4 + 2b^3 - 4b^2)$

2. $(-5g^2 + g)(2g^4 - 7g^3 - 8g^2)(-6g^4 - 6g^3 + 7g^2)$

3. $(5k + 4)(9k^3 + 9k^2 - 2k)(-8k^5 - 7k^4 - k^3)$

4. $(-5d^5 - 4d^4)(d^5 - 9d^4 + 4d^3)(-6d^3 + d^2 - 5d)$

5. $(-5x^5 + 3x^4)(5x^5 + 9x^4 - 2x^3)(-7x^2 + 4x + 2)$

Multiplying a Binomial by Two Trinomials (J) Answers

Simplify each expression.

1. $(-3b-5)(b^2+7b-2)(2b^4+2b^3-4b^2)$
$= -6b^7-58b^6-98b^5+66b^4+136b^3-40b^2$

2. $(-5g^2+g)(2g^4-7g^3-8g^2)(-6g^4-6g^3+7g^2)$
$= 60g^{10}-162g^9-490g^8+109g^7+279g^6-56g^5$

3. $(5k+4)(9k^3+9k^2-2k)(-8k^5-7k^4-k^3)$
$= -360k^9-963k^8-820k^7-199k^6+30k^5+8k^4$

4. $(-5d^5-4d^4)(d^5-9d^4+4d^3)(-6d^3+d^2-5d)$
$= 30d^{13}-251d^{12}-30d^{11}-93d^{10}-96d^9+80d^8$

5. $(-5x^5+3x^4)(5x^5+9x^4-2x^3)(-7x^2+4x+2)$
$= 175x^{12}+110x^{11}-429x^{10}+130x^9+50x^8-12x^7$