

Directions: Factor each polynomial completely if possible.

1. $-12d^8e - 24d^4$
 $-12d^4(d^4e + 2)$

2. $162pr^5s^2 + 36p^3r^6s - 90p^2r^3s$
 $18pr^3s(9r^2s + 2p^2r^3 - 5p)$

3. $38m^2n^3s + 114mn^4 - 76m^2sn^3 - 190mn^2s^3$
 $38mn^2(mns + 3n^2 - 2msn - 5s^3)$

4. $17x^3y^2 + 34xy^3 - 102x^2y^2 + 34xy$
 $17xy(x^2y + 2y^2 - 6xy + 2)$

5. $r^2 + 25r + 24$
 $(r+24)(r+1)$

6. $300 + 37n + n^2$
 $(25+n)(12+n)$

7. $55 + 16g^5 + g^{10}$
 $(11+g^5)(5+g^5)$

8. $a^2 - 20a + 75$
 $(a-15)(a-5)$

9. $114 - 25k + k^2$
 $(19-k)(6-k)$

10. $105 - 22b + b^2$
 $(15-b)(7-b)$

11. $40 - 13bx^2 + b^2x^4$
 $(8-bx^2)(5-bx^2)$

12. $10y^2 + 11y + 3$
 $(5y+3)(2y+1)$

13. $5 + 7m + 2m^2$
 $(5+2m)(1+m)$

14. $5c^2 + 12c + 7$
 $(5c+7)(c+1)$

15. $22p^2 - 35p + 3$
 $(11p-1)(2p-3)$

16. $11c^2 - 15c - 6$
 prime

17. $56s^2 - 33s - 108$
 $(8s+9)(7s-12)$

18. $7r^2 - 16rs - 15s^2$
 $(7r+5s)(r-3s)$

19. $6 - 7t^2 + 2t^4$
 $(3-2t^2)(2-t^2)$

20. $3 - 32r^4 + 20r^8$
 $(3-2r^4)(1-10r^4)$

21. $5x^2 + 65x + 210$
 $5(x+6)(x+7)$

22. $98m - 28m^2 + 2m^3$
 $2m(7-m)^2$

23. $175c - cx^2y^2$
 $c(175 - x^2y^2)$

24. $5zw^4 - 405$
 $5(zw^4 - 81)$

$$25. \quad \frac{588a - 12ar^2}{12a(7-r)(7+r)}$$

$$26. \quad \frac{2304d - 9c^2d}{9d(16+c)(16-c)}$$

$$27. \quad \frac{(a-2)^2 - 49k^2}{(a-2+7k)(a-2-7k)}$$

$$28. \quad \frac{9 + 6(1-x) + (1-x)^2}{(4-x)^2}$$

$$29. \quad \frac{c^2(2-y) + c(2-y) - (2-y)}{(2-y)(c^2 + c - 1)}$$

$$30. \quad \frac{5g^3 - 10g^2a - g + 2a}{(5g^2 - 1)(g - 2a)}$$

$$31. \quad \frac{2k^2ma - 4mk^3 + 8ak^2 - 16k^3}{2k^2(m+4)(a-2k)}$$

$$32. \quad \frac{(c+d)^3 - 4cd(c+d)}{(c+d)(c-d)^2}$$

$$33. \quad \frac{c^2 - 18cd + 81d^2 - 225x^2}{(c-9d-15x)(c-9d+15x)}$$

$$34. \quad \frac{g^6 - 127g^3 + 250}{(g^3 - 2)(g-5)(g^2 + 5g + 25)}$$

$$35. \quad \frac{216z^3 - 125a^3}{(6z-5a)(36z^2 + 30az + 25a^2)}$$

$$36. \quad \frac{x^3 - x(y-z)^2}{x(x+y-z)(x-y+z)}$$

$$37. \quad \frac{k^2 + 14k + 49 - g^2}{(k+7-g)(k+7+g)}$$

$$38. \quad \frac{4ab + (a-b)^2}{(a+b)^2}$$

$$39. \quad \frac{a^{4b} + 5a^{3b}}{a^{3b}(a^b + 5)}$$

$$40. \quad \frac{v^{2c+1} - 22v^{c+1} + 121v}{v(v^c - 11)^2}$$