1. Write the expression in expanded form. $(-5q + \theta)^4$

A. $(-5q + \theta) \cdot (-5q + \theta) \cdot (-5q + \theta) \cdot (-5q + \theta) \cdot (-5q + \theta) \cdot (-5q + \theta)$

B. $(-5q + \theta) + (-5q + \theta) + (-5q + \theta) + (-5q + \theta)$

C. $(-5q + \theta) \cdot (-5q + \theta) \cdot (-5q + \theta) \cdot (-5q + \theta)$

D. $(-5q + \theta) + (-5q + \theta) + (-5q + \theta) + (-5q + \theta) + (-5q + \theta) + (-5q + \theta)$

E. $-20q + \theta^4$

F. $-5q + \theta^4$

2. Simplify the expression. $\left[\left(\frac{12u^{8}\xi^{9}}{8u^{5}\xi^{2}}\right)\left(\frac{14u^{9}\xi^{6}}{20u^{5}\xi^{3}}\right)\right]^{0}+\left[\left(\frac{8c^{6}\beta^{7}}{9v^{5}\xi^{5}}\right)\left(\frac{20\beta^{7}b^{8}}{12\xi^{5}\theta^{2}}\right)\right]^{0}$

A. 1

B. 0

C. $\frac{21}{20}u^{7}\xi^{10}$

D. $\frac{14}{5}u^{17}\xi^{10}$

E. $\frac{14}{5}u^{7}\xi^{10}$

F. $\frac{21}{20}u^{17}\xi^{14}$

G. $\frac{14}{5}u^{7}\xi^{14}$

H. 2

3. Simplify the expression. $\frac{y^5\gamma^9}{y^4\gamma^3}$

A. $(y\gamma)^7$

B. $\frac{y}{\gamma^6}$

C. $\frac{1}{y^9\gamma^{12}}$

D. $y^9\gamma^{12}$

E. $\frac{1}{y\gamma^6}$

F. $y\gamma^6$

G. $y\gamma^7$

H. $\frac{\gamma^6}{y}$

4. Simplify the expression. $\left[\frac{(q^{-4}\cdot p^{-3})^4(q^6\cdot p^2)^3}{(q^7\cdot p^{-7})^{-6}}\right]^5$

A. $q^{225}p^{-235}$

B. $q^{195}p^{-265}$

C. $q^{265}p^{-195}$

D. $q^{180}p^{-280}$

E. $q^{175}p^{-285}$

F. $q^{190}p^{-270}$

G. $q^{220}p^{-240}$

H. $q^{130}p^{-330}$

5. Simplify and rewrite the expression without negative exponents. $\frac{y^{-6}}{u}$

A. $-u^6y^6$

B. $-\frac{1}{u^6y}$

C. $-y^6u$

D. $-\frac{1}{y^6u^6}$

E. $\frac{1}{y^6u}$

F. y^6u

G. y^6u^6

H. $\frac{1}{u^6y^6}$

6. Subtract the polynomials. $(-5u^2 + 9u) - (2u^2 - 2u - 9)$

A. $-7u^2 + 11u + 6$

B. $-7u^2 + 5u + 9$

C. $-7u^2 + 11u + 9$

D. $-9u^3 - 10u^2 + 11u + 9$

E. $3u^3 - 7u^2 + 11u + 9$

F. $-3u^2 + 11u + 9$

G. $3u^2 + 11u + 9$

H. $9u^3 - 7u^2 + 11u + 9$

7. Multiply the polynomials. $(6y^2 + 7y)(3y^2 - 7y - 8)$

A. $18y^4 - 21y^3 - 97y^2 - 60y$

B. $18y^4 - 21y^3 - 97y^2 - 56y$

C. $18y^4 - 21y^3 - 97y^2 - 56y + 4$

D. $18y^4 - 24y^3 - 97y^2 - 56y$

E. $18y^4 - 21y^3 - 103y^2 - 56y$

8. Multiply the polynomials. $(7r^2)(5r^2)$

A. $35r^4 + r^3$

B. $35r^4 - 6r$

C. $35r^4$

D. $35r^4 - 3r^2$

E. $35r^4 + 5$

9. Expand the square. $(x^2 - 5)^2$

A. $x^4 + 10x^2 - 25$

B. $x^4 + 25$

C. $x^4 - 10x^2 + 25$

D. $x^4 - 25$

E. $x^4 - 10x^2 - 25$

10. Expand the square. $(z+2)^2$

A. z^2+4

B. $4z^2+1$

C. z^2-4z+4

D. z^2+2z-4

E. z^2+4z+4

11. Factor the expression by grouping. $28\phi\gamma - 24\gamma - 14\phi u + 12u$

A. $(4\gamma)(2u + 6 + 7\phi)$

B. $(7\phi + 6)(4\gamma + 2u) = 2(7\phi + 6)(2\gamma + u) = (14\phi + 12)(2\gamma + u)$

C. $(2u + 6)(7\phi + 4\gamma) = 2(u + 3)(7\phi + 4\gamma) = (u + 3)(14\phi + 8\gamma)$

D. $(7\phi - 6)(4\gamma - 2u) = 2(7\phi - 6)(2\gamma - u) = (14\phi - 12)(2\gamma - u)$

E. $(4\gamma)(7\phi - 6 + 2u)$

F. $(2u)(7\phi - 6 + 4\gamma)$

G. $(7\phi - 6)(4\gamma + 2u) = 2(7\phi - 6)(2\gamma + u) = (14\phi - 12)(2\gamma + u)$

H. $(7\phi)(2u + 6 + 4\gamma) = (14\phi)(u + 3 + 2\gamma)$

12. Factor the following quadratic polynomial. $t^2 - 14t\gamma + 48\gamma^2$

A. $(t - 6\gamma)(t + 8\gamma)$

B. $(\gamma + 6t)(\gamma + 8t)$

C. Not factorable. This trinomial is prime.

D. $(\gamma - 6t)(\gamma + 8t)$

E. $(t + 6\gamma)(t - 8\gamma)$

F. $(t - 6\gamma)(t - 8\gamma)$

G. $(t + 6\gamma)(t + 8\gamma)$

H. $(\gamma - 6t)(\gamma - 8t)$

13. Factor the following quadratic polynomial. $6\phi^2 + 11\phi - 6$

A. Not factorable. This trinomial is prime.

B. $(2\phi + 3)(3\phi - 2)$

C. $(\phi - 1)(\phi + 6)$

D. $(\phi - 1)(\phi - 6)$

E. $(2\phi - 3)(3\phi - 2)$

F. $(\phi + 1)(\phi + 6)$

G. $(2\phi + 2)(3\phi + 3)$

H. $(2\phi - 2)(3\phi + 3)$

14. Factor the following quadratic polynomial. $35\phi^2 + 41\phi + 12$

A. $(7\phi + 6)(5\phi + 9)$

B. $(7\phi + 1)(5\phi + 12)$

C. Not factorable. This trinomial is prime.

D. $(35\phi + 4)(\phi + 3)$

E. $(4\phi + 5)(3\phi + 6)$

F. $(8\phi + 6)(2\phi + 9)$

G. $(7\phi + 4)(5\phi + 3)$

H. $(8\phi + 4)(2\phi + 3)$

15. Completely factor using the forms for perfect square trinomials. $36x^2 - 84x + 49$

A. $(6x - 7)(9x + 7)$

B. $(6x + 7)(9x + 7)$

C. $(36x - 7)(x - 7)$

D. $(6x - 7)(6x - 7)$

E. $(7x + 6)(7x - 4)$

F. Not factorable. This trinomial is prime.

G. $(6x + 7)(6x - 7)$

H. $(6x - 1)(6x + 49)$

16. Completely factor using the forms for perfect square trinomials. $25r^2 + 30r + 9$

A. $(3r + 5)(3r + 2)$

B. $(5r + 2)(5r + 6)$

C. $(5r + 1)(5r + 9)$

D. $(8r + 2)(4r + 6)$

E. Not factorable. This trinomial is prime.

F. $(5r + 3)(5r + 3)$

G. $(8r + 3)(4r + 3)$

H. $(25r + 3)(r + 3)$

17. Factor the polynomial by grouping. $25q^2 - 4t^2 - 12t - 9$

A. $(5q + 1)(2t + 3)$

B. $(5q - 1)(2t - 3)$

C. $(5q - 1)(2t + 3)$

D. $[5q + (2t + 3)][5q - (2t + 3)]$

E. $[5q + (2t + 3)][5q + (2t - 3)]$

F. $(5q + 1)(2t - 3)$

G. $[5q + (2t + 3)][5q - (2t - 3)]$

H. $[5q - (2t + 3)][5q - (2t + 3)]$

18. Completely factor each polynomial using the strategy outlined in Section 6.5 in your textbook.

$$12a^4 - 8a^3\theta - 15a^2\theta^2$$

A. $a^2(2a - 3\theta)(6a + 5\theta)$

B. $(a^2 + 1)(12a + 3\theta)(a - 5\theta)$

C. $(a^2 - 1)(2a + \theta)(6a - 15\theta)$

D. $a^2(2a - 3\theta)(6a - 5\theta)$

E. $(a^2 - 1)(12a + 3\theta)(a - 5\theta)$

F. $2a^2(2a + 3\theta)(6a - 5\theta)$

G. $(a^2 + 1)(2a - \theta)(6a + 15\theta)$

H. $2a^2(12a - 3\theta)(a + 5\theta)$

19. Solve the equation. $12\phi^2 + 18\phi = 12$

A. $\phi = -2$ or $\phi = 7$

B. $\phi = \frac{2}{3}$ or $\phi = \frac{1}{4}$

C. $\phi = \frac{1}{4}$ or $\phi = \frac{8}{7}$

D. $\phi = \frac{1}{4}$ or $\phi = -\frac{8}{7}$

E. $\phi = \frac{2}{3}$ or $\phi = -\frac{1}{4}$

F. $\phi = 2$ or $\phi = -7$

G. $\phi = -\frac{1}{2}$ or $\phi = 2$

H. $\phi = \frac{1}{2}$ or $\phi = -2$

20. Construct a quadratic equation with the following solutions $\phi = -\frac{5}{3}$ or $\phi = -\frac{17}{2}$.

A. $34\phi^2 - 299\phi + 77 = 0$

B. $4\phi^2 + 44\phi + 221 = 0$

C. $4\phi^2 - 44\phi + 221 = 0$

D. $6\phi^2 - 61\phi + 85 = 0$

E. $85\phi^2 + 119\phi + 22 = 0$

F. $85\phi^2 - 119\phi + 22 = 0$

G. $34\phi^2 + 299\phi + 77 = 0$

H. $6\phi^2 + 61\phi + 85 = 0$

Answers

1. C.
2. H.
3. F.
4. G.
5. E.
6. C.
7. B.
8. C.
9. C.
10. E.
11. D.
12. F.
13. A.
14. G.
15. D.
16. F.
17. D.
18. A.
19. H.
20. H.